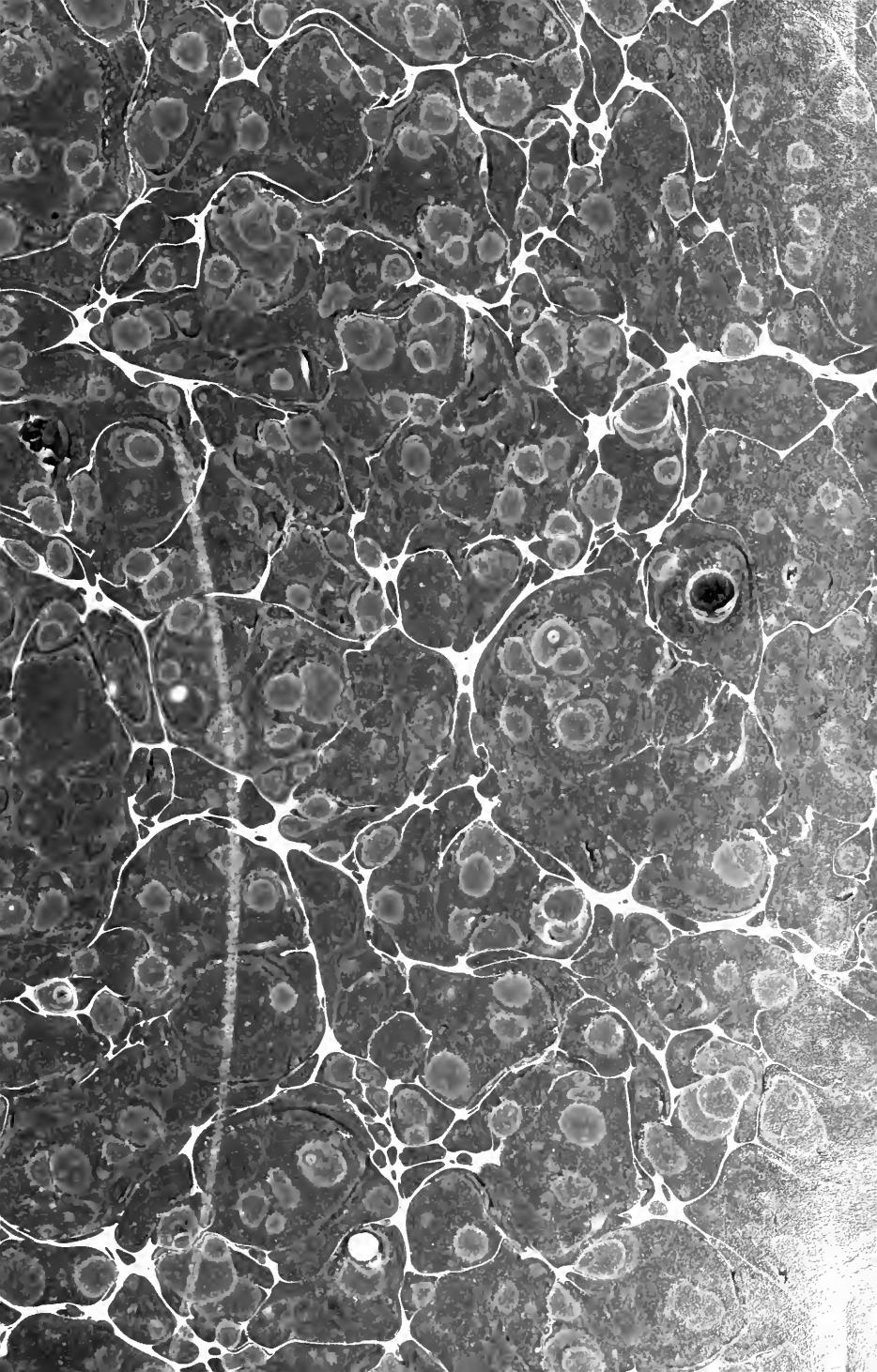




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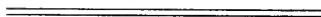
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Page 111, line 4 from bottom, for "*Dryocates*" read "*Dryocætes*."

„ 227, „ 1 „ bottom of table, for "Entom., XXVI, p. 327" read
"Entom., XXIX, p. 315."

„ 241, „ 16 „ top, for "*Sideria*" read "*Siderea*."

„ 241, „ 9 „ bottom, for "*Mimæscoptilus*" read "*Mimeseoptilus*,"
and for "*bipunctidactyla*" read "*bipunctidactylus*."

EXPLANATION OF PLATES.

- Plate I.—Larvæ of *Agriades damon* and *Plebeius argyrognomon* (see pp. 22-29).
- „ II-VII.—Larva-skins of *Agriades damon*, *Plebeius argyrognomon*, and *P. argus* (see pp. 22-29).
- „ VIII.—*Agrion ornatum*, Selys (see p. 57).
- „ IX-X.—Ædeagus of the British species of *Gyrinus* (see pp. 128, 138).
- „ XI.—*Oreopsyche pyrenaella*, H.S. (see pp. 237-240).
- „ XII.—*Pseudonympha cassius*, *P. detecta* (n. sp.), and *P. vigilans* (see pp. 281-2).

Portraits—Past Editors of the Entomologist's Monthly Magazine (see p. 125).

Sketch-map—Shewing distribution of *Danaïda plexippus* (see p. 181).

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[VOL. L.]

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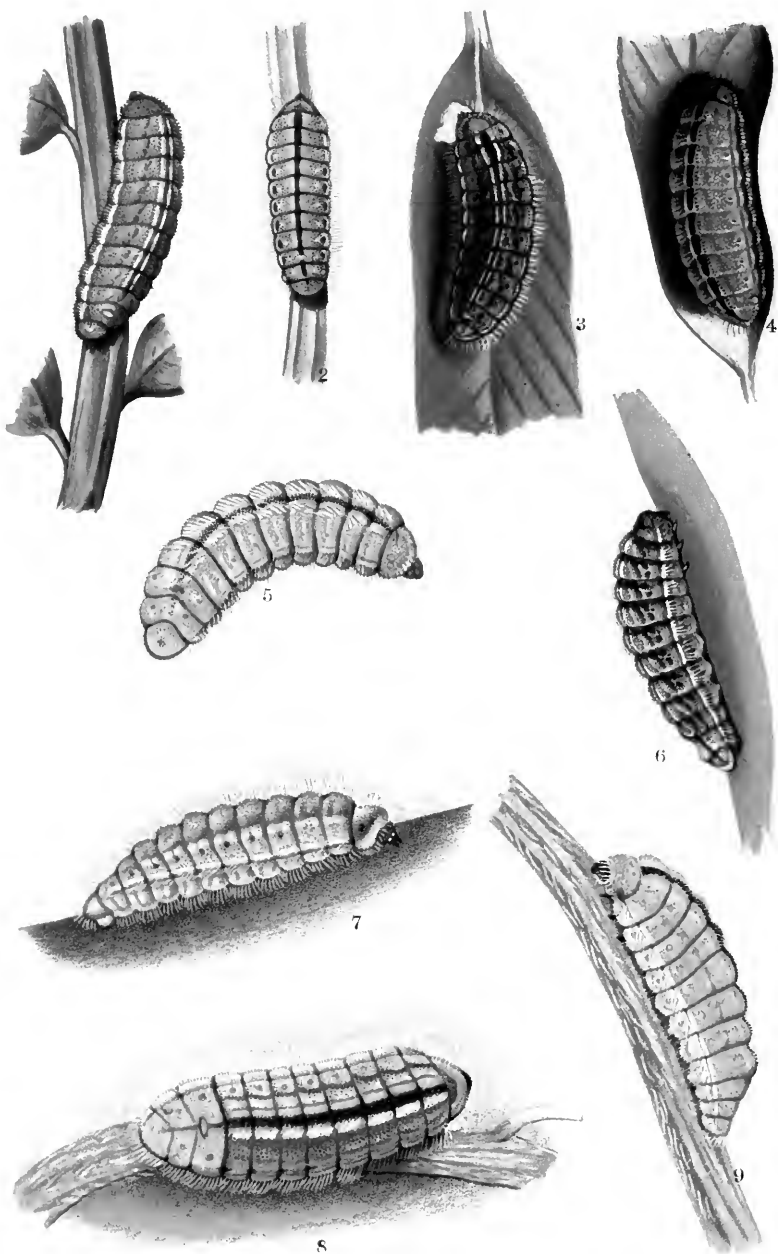
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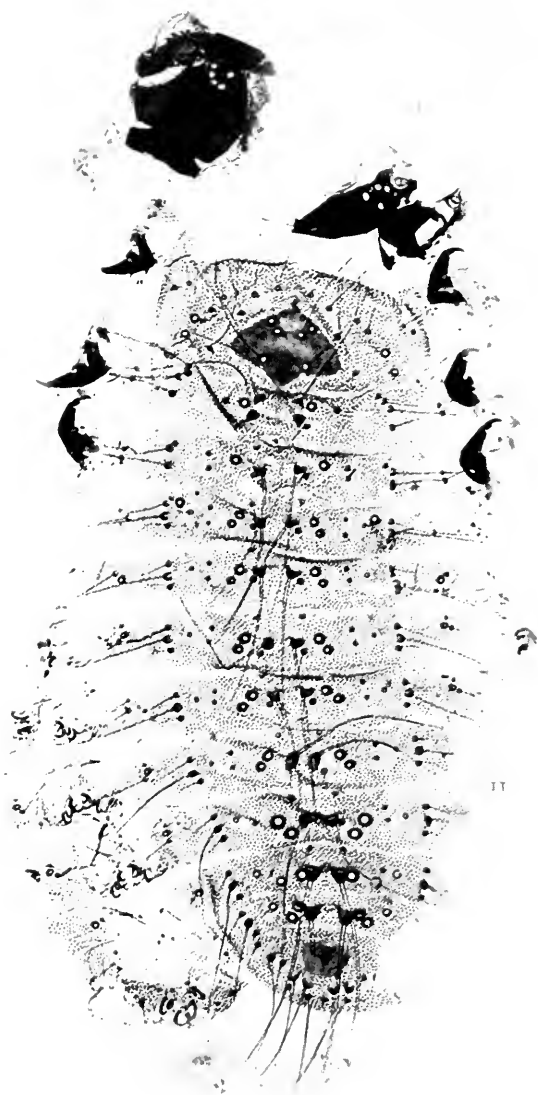
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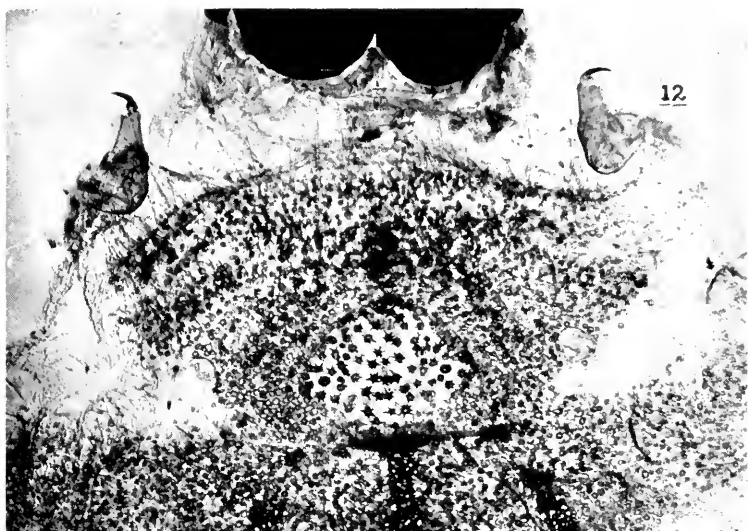
20. 2000. 1st stage, larva skin X 67.



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Photo, F. A. Clark.

P. argus (aegeon) 1st stage, larva skin $\times 67$.



Photo, A. E. Tonge

A. damon, larval skin, last stage $\times 30$.

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[VOLUME L].

FURTHER NOTES ON SCENTS IN BUTTERFLIES.

BY G. B. LONGSTAFF, M.A., M.D., F.L.S., &c.

During the two years that have elapsed since the appearance of my list* of the butterflies which have been observed to possess a scent, I have had further opportunities of investigating the subject.

Butterfly scents have been divided by Fritz Müller and Dixey into two categories:—

- (1) Attractive scents: in the very large majority of cases confined to the male sex. These are almost always agreeable to the average human perception.
- (2) Repulsive or protective scents: usually common to both sexes, and often strongest in the female. These are, for the most part, disagreeable to man, or even disgusting.

As perhaps might have been expected, further investigation, while extending the basis of facts upon which these generalizations have been made, has revealed more and more exceptions.

The exceptional occurrence of female butterflies with attractive scents needs further explanation. Moreover, my own experience with scents believed to be repulsive convinces me that if such scents are really protective they must be far more repulsive to the enemies of butterflies than they are to man. All lovers of dogs must have noticed that many odours which give pleasure to us excite disgust in them, and *vice versa*.

In the following notes an asterisk indicates that the species is one that I have not previously dealt with.

* "Butterfly Hunting in Many Lands." 1912. pp. 490-516. Full references to the authorities are there given. The species are dealt with here in the same order to facilitate comparison.

NYMPHALIDÆ.

ITHOMIINÆ.

* *Ceratinia fenestella*, Hew. (Trinidad, 1913). Out of three examined, a ♀ had an odour resembling musty tobacco. Fritz Müller detected a rather faint scent in *C. eupompe*, Hb.

* *Mechanitis lycidice*, Bates, and *M. veritabilis*, Btl. (Trinidad and Venezuela, 1913). Ten specimens of each of these closely allied species were examined. In one only, a ♂ of the first named, was a slight scent suspected in connection with the fringes. So far as it goes this confirms Fritz Müller's record of a very faint scent in the ♂ of *Mechanitis lysimnia*, F.

* *Eutresis hypereia*, Dbl. and H. (Venezuela, 1913). A ♀, the only specimen met with, gave out both during life and after death, a strong odour like that of cockroaches.

DANAINÆ.

Danaida archippus, F. (Dominica and Venezuela, 1913). 4 ♂ ♂ and 2 ♀ ♀ examined. Previous results confirmed, but in one ♀ the scent is described as "not strong, scarcely disagreeable."

Danaida eresimus, Cr. (Venezuela, 1913). Of 2 ♂ ♂ examined, one had a sweet scent, somewhat aromatic in character, the other a "not unpleasant" scent. In 1907 I was somewhat in doubt as to the ♂ possessing a scent.

* *Lycorea atergatis*, Dbl. (Trinidad and Venezuela, 1913). Six specimens were examined, 3 ♂ ♂, 3 ♀ ♀. All the ♂ ♂ had the tufts everted, but in only one of them could any scent be detected, it was slight and resembled that of a cockroach. One of the ♀ ♀ had a similar slight odour, in another the scent was compared to that of a cigar box. Fritz Müller found an extremely strong, rather disagreeable odour, in "*Lycorea* sp."

SATYRINÆ.

Pararge megæra, L. (Spain, 1913). In 4 ♂ ♂ out of 9, I succeeded in detecting a more or less distinct scent of chocolate, without the vanilla element.

* *Pararge mæra*, L. (Spain, 1913). I took but one specimen, ♀, which had a scent of pure chocolate, strong during life, less strong after death.

NYMPHALINÆ.

Didonis biblis, F. (Trinidad and Venezuela, 1913.) 4 specimens

examined, 3 of them ♂♂. No scent was detected in any of them, so that in this species I have again failed to confirm Fritz Müller.

* *Byblia ilithyia*, Drury. (Sudan, 1912). A ♂ and 4 ♀♀ were examined: the former had a sweet aromatic scent, which struck me as like scented tobacco; of the latter, one had a similar scent, but less strong; another a scent compared to chocolate; a third to that of *Teracolus protomedia*, of which, later. This scent in the female tallies with earlier observations on *B. goetzius*, Herbst.

Hypolimnas misippus, L. (Sudan, 1912). In 2 ♂♂ I found no scent, but in 2 ♀♀ out of 4, I detected a slight treacly odour. Compare Dr. Dixey's observations (*op. cit.*, p. 502).

Victorina stelenes, L. (Trinidad, 1913). 2 ♂♂ were taken, one appeared to have a slight flowery scent; I was not very certain about this at the time, but find that it agrees with my earlier experience with this fine insect.

Agraulis vanillæ, L. (West Indies, 1913). Out of 4 ♂♂ examined, one had the stable-like odour noted in 1907.

Colænis julia, F. (West Indies, Trinidad, and Venezuela, 1913). 4 ♂♂ and 4 ♀♀ were examined; in the 4 ♂♂, and doubtfully in one of the ♀♀, a scent was noted, in only one instance strong, said to be "peculiar," "sweet," "like treacle," or "like ginger-bread nuts." These results are in concordance with my experience of the sub-species *cillene*, Cr., in Jamaica.

[I follow here the arrangement adopted in "Butterfly Hunting in Many Lands," but I am now disposed to consider *Agraulis* and *Colænis* as *Heliconinæ*.]

HELICONINÆ.

Eueides aliphera, Godt. (Trinidad and Venezuela, 1913). 4 ♂♂ and 3 ♀♀ examined. In one ♂ no scent was observed; the other three had both during life and after death an odour compared to rancid lamp-oil, or to acetylene, varying from very slight to strong. 2 ♀♀ had a similar scent to the ♂, but the third is noted as having "a sweet, pleasant scent." These results, speaking generally, confirm those previously obtained.

Heliconius hydarus, Hew. (Trinidad and Venezuela, 1913). Previous results were confirmed, but 2 ♂♂ and 1 ♀ *H. euryades*, Riff., gave negative results.

* *Heliconius ethilla*, Godt. (Trinidad, 1913). The only specimen at my disposal, a ♀, had a strong tobacco-like odour.

LYCÆNIDÆ.

**Thestor ballus*, F. (Spain, 1913). 8 ♂♂ were examined: all had a scent, not very strong, compared sometimes to chocolate, sometimes to "chocolate sweets" (i.e., with a vanilla element). 4 ♀♀ appeared to be scentless.

PAPILIONIDÆ.

PIERINÆ.

Catopsilia florella, F. (Sudan, 1912). The strong luscious scent of the ♂ was confirmed,

Rhabdodryas trite, L. (Dominica, 1913). The only specimen taken, ♂, yielded a "sweet pleasant scent; not so strong or luscious as *C. eubule*," confirming Fritz Müller.

Phœbis agarithe, Bsd. (St. Lucia, 1913). A pair had a "strong fetid butyric odour"; ? emitted by the ♀.

Callidryas eubule, L. (West Indies, Trinidad and Venezuela, 1913). The strong luscious scent of the ♂, compared by me to *Freesia* but by a friend to carnation, was amply confirmed, as was also the butyric odour of the ♀.

Gonepteryx rhamui, L., and *G. cleopatra*, L. (Spain, 1913). These butterflies were found flying together at Ronda, Andalusia, in March.

9 ♂ *cleopatra* were examined: in all a scent was found; in one it was described as "very slight," in another as "decided, but not very strong," in four as "strong"; in 8 out of the 9 it was unhesitatingly compared to that of *Freesia*.

8 ♂ *rhamui* were examined: in 5 I was unable to detect any trace of scent, either during life or after death, but in the other 3 the living insects had a very faint scent, which I could not clearly describe, but in each case noted that it was not that of *Freesia*.

These results are in complete accordance with those obtained in Algeria in March, 1905.

It would, however, appear that I paid little or no attention to the female *Gonepteryx* in Algeria, although I sent home four specimens, of which three may be referred to *cleopatra*, the fourth probably to *rhamui*.

But at Ronda I examined 9 ♀♀, all seemingly referable to *cleopatra*, and was not a little surprised to find a scent in all of them:

this scent was more distinct than that of the male *rhamni*, but much less strong than that of the male *cleopatra*. To me it was agreeable, sweet, and suggested *Freesia*.

Are we to regard *rhamni* and *cleopatra* as distinct species of which the females closely resemble one another? Or are we to look upon them as but one species with a (locally) dimorphic male?

Dr. Dixey gave to the Entomological Society some years ago an admirable summary of the facts, which was fully reported at the time.†

An obvious question arises: can the scent be directly connected, or indirectly correlated with the orange scales? Mr. Enock's record of ants attacking *G. rhamni* and confining their depredations to the orange spots is very suggestive, especially in the light of somewhat similar observations as to *Danainæ*.

**Aphrissa stativa*, Cr. A ♂ had, when alive, a slight sweet scent.

Colias edusa, auct. (Spain, 1913). 6 ♂♂ were examined; in three I was unable to detect any odour, in two a very slight chocolate-like scent was suspected, in one I satisfied myself that a slight but distinct scent was present, which I was disposed to compare to that of clove-pink. I was, however, unable to localise the scent in the "patches."‡

Terias nise, Cr. (W. Indies, Trinidad, and Venezuela, 1913.) 19 ♂♂ were examined of which 5 had a sweet scent, compared in several instances to the peculiar smell of *Convolvulus arvensis*. 7 ♀♀ gave negative results. These observations confirm my experience in 1907, though the positive results are proportionately fewer.

Teracolus protomedia, Klug (Sudan, 1912)). In 6 ♂♂ out of 24 I detected a slight scent, not easy to describe; the words "dusty," "stuffy," "musky," "peculiar," "like wood," and "very faint *Freesia*" appear in my note book. Previous results were thus confirmed.

**T. eupompe*, Klug (Sudan, 1912). In two ♂♂ out of a large number examined a slight scent was observed, in one noted as "sweet," in the other as "stuffy."

T. halimede, Klug (Sudan, 1913). A ♂, one of many, had a distinct musky odour.

**T. pleione*, Klug (Sudan, 1913). A ♂, one of many, had a distinct musky odour.

† Proc. Ent. Soc. Lond., 1905, pp. xxxvi—xli.

‡ See Dixey, Proc. Ent. Soc. Lond., Oct. 5th, 1904, p. lvii.

**T. evippe*, L. (Sudan, 1913). A ♂, out of 12 examined, yielded a scent like *Freesia*.

**T. evarne*, Klug (Sudan, 1912). Out of a large number of ♂♂ five were found to have a scent: it was distinct and sweet in character, in one compared to *Freesia*, but in another described as "somewhat medicinal."

Having captured large numbers of many species of *Teracolus*, I am forced to the conclusion that the scent of the males is either very slight, or very transient, or for some other reason more difficult to detect than scents in some other genera.

**Calopieris eulimene*, Klug (Sudan, 1912). 3 ♂♂ out of 21 appeared to have a faint sweet scent, once suggesting gorse.

**Leuceronia buquetii*, Bsd. (Sudan, 1912). Out of 4 ♂♂, I suspected a faint sweet scent in one, and noted a "slight, scarcely agreeable" scent in another.

**Euchloë bellidice*, Hübn. (Spain, 1913). Out of 19 ♂♂ examined a scent was detected in 15; this was variously estimated as "very slight," "slight," "distinct," or "decided"; in most cases it was described as "sweet," once compared to that of *Freesia*, once said to be "somewhat aromatic," another time "scarcely pleasant." Only 3 ♀♀ were examined; one had an unpleasant odour, the other two were scentless. [This is *A. belia*, Cr.].

This species flies with the next, but is commoner and more generally distributed, and a larger insect.

**Euchloë tagis*, Hübn. (Spain, 1913). Of this local species I examined 13 ♂♂, 5 ♀♀, and one of which the sex is uncertain. In none of them was any odour detected.

The two preceding species are closely allied, so that exceptional specimens of the former are said to resemble the latter. It is interesting to find that they differ in the matter of scent production.

**Euchloë belemia*, Esp. (Spain, 1913). 15 ♂♂ were examined: two had a "pleasant scent," which was "slight" in one, "very slight" in the other. In six others a scent was suspected, in one of which it appeared to be "very sweet." 11 ♀♀ gave negative results. This butterfly flies swiftly.

**Daptonoura lycimnia*, Cr. (Trinidad and Venezuela, 1913). Of 11 ♂♂, one appeared to be scentless, the other 10 all had a decided sweet luscious scent, compared to that of *Freesia*. My experience in 1907 was thus fully confirmed, but my results are not in complete

accordance with those of Fritz Müller, who found the scent of the ♂, though very delicious, rather faint and often hardly distinguishable. Two ♀ ♀ were examined but no scent found. (Compare *op. cit.*, p. 511).

Belenois gidica, Godt. (Sudan, 1912). Of 13 ♂ ♂ all appeared to be scentless, but in 1 ♀ out of 5 a faint scent was detected.

Belenois mesentina, Cr. (Sudan, 1912). I found the ♂ to have a slight scent, variously suggesting the adjectives "musky," "aromatic," "flowery." Previous results were thus confirmed.

Pieris (Perrhybris) calydonia, Bsd. (Venezuela, 1913). 11 specimens, all ♂, were examined; in 4 of these there was a distinct scent, described as "flowery" or "like *Freesia*"; in two a somewhat unpleasant scent, suggesting pomade, was found. On the whole previous results were confirmed.

**Pieris (Perrhybris) serata*, Feld. (Venezuela, 1913). 2 ♂ ♂ had a slight but distinct flowery scent; 2 ♀ ♀ were scentless.

**Pieris (Perrhybris) phileta*, F. (W. Indies and Venezuela, 1913). Out of 10 ♂ ♂ examined, only four yielded a scent, twice doubtfully described as "peculiar," once as "heavy, somewhat unpleasant," once as "strongly fetid." Of two ♀ ♀ one had a "slight fetid odour." In 1907 I failed to detect any odour in this species.

**Synchlōi glauconome*, Klug (Sudan, 1912). 3 ♂ ♂ out of 8 yielded a distinct sweet scent like that of *Freesia*.

**Synchlōi daphidice*, L. (Spain, 1913). Of 32 ♂ ♂ examined, 24 had a scent. This was in no case strong, but variously estimated as "very slight," "slight," "distinct," or "decided"; it was variously described as "aromatic," "like sweet-briar," or "scarcely pleasant," but more often as "sweet," and in a majority of specimens was compared to that of *Freesia*. Of one of the 24 ♂ ♂ the note says that observation in the field showed "a slight sweet scent," but that at home the butterfly was found alive in its envelope, and emitted "a strong scent, somewhat like that of *P. rapæ*." One observation gave a doubtful, seven gave negative results. In 8 out of 10 ♀ ♀ examined, no scent was detected; in one "a very slight but very sweet scent" was noted; of another it is recorded "a very slight *Freesia* scent: no doubt about it."

PAPILIONINÆ.

**Thais rumina*, L. (Spain, 1913). In 10 out of 11 ♂ ♂, and in all the 7 ♀ ♀ examined, a scent was easily detected, though sometimes it

was but slight ; it appeared to be alike in both sexes. From time to time I have attempted to describe this scent by such words as " somewhat unpleasant," " disagreeable," " ? like rue," " peculiar," " musty," or " somewhat like musty straw, but less disagreeable."

When examining the specimens at Oxford in July, 1913, five months after capture, and again in October, eight months after capture, the scent was still very distinct, even in the presence of naphthalin. Mr. Bagnall thought it " musky," Mr. Hamm " musty," Dr. Carpenter thought it " like smell of pepper, but mild pepper," while Dr. Dixey suggested " the smell of the pepper-tree." The last comparison struck me as apt.

T. rumina has a striking pattern, similar on both upper and undersides, it is slow in its movements and bold in its behaviour ; further it is hard to kill ; when it is added that both sexes have a peculiar scent, it will be seen that it has all the characteristics of a protected species.

**Papilio cymochles*, Dbl. (Trinidad, 1913). A ♂ had a somewhat unpleasant odour, described as " stuffy "; a ♀ a scent described as " like that of an old pipe."

**Papilio machaon*, L. (Spain, 1913). Two ♂ ♂ had a strong disagreeable odour of musty straw.

**Papilio podalirius*, L. (Spain, 1913). A ♀ had a decided odour like straw, but not disagreeable.

Yet once more I appeal to field naturalists to join in the investigations of these interesting perfumes, which hitherto have attracted the attention of so few.

Highlands, Putney Heath :

October 24th, 1913.

A GENUS OF HOMOPTERA, &c., NEW TO THE BRITISH LIST.

BY H. F. FRYER, F.E.S., AND J. C. F. FRYER, M.A., F.E.S.

We are glad to be able to record the occurrence of the following macropterous forms, hitherto unknown, and also a genus and species which is an addition to the British List of *Hemiptera-Homoptera* :—

Aræopus pulchellus, Curt. A macropterous ♀ taken by sweeping reeds and grass at Chippenham Fen, Cambridgeshire, last August.

Euidella speciosa, Boh. A macropterous ♀ taken under similar circumstances, and at the same time as the foregoing.

Grypotes pinetellus, Zett. (*Jassus pinetellus*, Zett., *puncticollis*, Sahlb.).

This is a genus new to Britain: the species in question has been recorded from Scandinavia, Austria, France, and Germany. The specimens in the British Museum are from Glogganitz and Hainfeld, South Austria, and were taken by Dr. Eger. Zetterstedt¹ and Melichar² state the habitat of *G. pinetellus* as being on or under pine trees, the latter author mentioning *Pinus sylvestris* and *P. nigricans* on the authority of Löw. We took numerous examples of it near Mildenhall in August and October last year. They appeared to be confined to patches of rough grass consisting of mixed *Agrostis tenuis* and *Carex arenaria*, which are common on the East Anglian heaths. The patches of grass were growing under or near Scotch Pine (*Pinus sylvestris*); but although these trees were carefully beaten, no specimens occurred actually on them, all were swept from the grass before referred to.

We must acknowledge our indebtedness to Mr. E. A. Butler, who kindly examined and determined a number of our *Homoptera*, and among them detected the three species now recorded. The following descriptions of the insects have been kindly supplied by him.

ARÆOPUS PULCHELLUS, Curt.

Macropterous ♀. Coloured similarly to the ♂, and with elytra nearly twice as long as abdomen. Scutellum about twice as long as pronotum.

Length, including elytra, 7½ mm.

EUIDELLA SPECIOSA, Boh.

Macropterous ♀. Fore parts similar to those of ♂, but broader. Elytra rather longer and broader than in ♂, with the dark markings much reduced; the basal spot becomes a mere streak, and the apical band is reduced to spots at base of membrane and apex of corium amidst which the veins remain yellowish, and a faint cloud at the inner margin of the membrane.

Length, including elytra, 6 mm.

GENUS GRYPOTES, Fieb.

This genus of the *Jassaria* may be placed next to *Cicadula*. It is easily recognised by the rounded vertex, which is short, about $\frac{2}{3}$ as long as the pronotum, and of almost equal length throughout. The clypeus is narrow and the antennæ are about half as long as the body.

¹ Zetterstedt. *Insecta Lapponica*.

² Melichar. *Cicadinen von Mittel-Europa*.

G. PINETELLUS, Zett.

Sordid yellow; head clearer yellow with brown or blackish markings, the chief of which are a transverse band where the vertex passes into the face, deeply upwardly arcuate in the middle, a second band beneath this, and more or less parallel to it, but less deeply arcuate in the middle; a third, straighter and shorter, and more or less interrupted in the middle, just above the antennæ, and a spot on each side of the vertex near the hinder margin of the eye; frons more or less plainly marked with transverse brown lines; clypeus black. Pronotum with numerous dark brown spots in front and striate behind; scutellum short and broad, often more or less more marked with reddish, and with an impressed dark line beyond the middle, above which are two brownish spots. Elytra sordid yellow, becoming hyaline towards the costa; membrane smoky. Legs concolorous, more or less spotted with black; anterior tibiæ outwardly, intermediate and posterior inwardly, streaked with black. Abdomen above black with margins of segments yellow.

♂. Somewhat smaller than ♀, and with all the dark markings more pronounced; the last dorsal adominal segment excavated above the anal tube.

Length, 4—4½ mm.

The Priory, Chatteris:

December 3rd, 1913.

COLEOPTERA IN CAMBRIDGESHIRE AND HUNTINGDONSHIRE.

BY H. FORTESCUE FRYER, F.E.S.

(Continued from Vol. xlix, p. 268).

CLAMBIDÆ.

Calyptromerus dubius, Marsh.*—Holwoods.

SILPHIDÆ.

Agathidium lævigatum, Er.*—Holwoods. *Liodes orbicularis*, Hbst.—Chatteris. *Anisotoma calcarata*, Er.*—Doddington. *Necrophorus humator*, Goeze.—Chatteris; *mortuorum*, F.—Wood Walton; *vestigator*, Hersch., *ruspator*, Er., and *interruptus*, Steph.—Chatteris; *respillo*, L.—Wood Walton. *Silpha tristis*, Ill.—Wicken, Chatteris, Doddington, Warboys; *obscura*, L.—Holwoods; *thoracica*, L.—Chippenham; *sinuata*, F.—Chatteris; *rugosa*, L.—generally distributed. *Choleva cisteloides*, Fröl.—Chatteris, Doddington; *spadicea*, Stm.—Doddington; *agilis*, Ill.—Chatteris, Holwoods; *velox*, Spence.—Chatteris, Holwoods, Madingley; *anisotomoides*, Spence*—Chatteris; *fusca*, Pz.—Chatteris, Warboys; *nigricans*, Spence, and *morio*, F.—Chatteris, Holwoods; *grandicollis*, Er.*—Holwoods; *nigrita*, Er.—Warboys; *tristis*, Pz.—Holwoods, Doddington; *chrysomeloides*, Pz., *fumata*, Spence, and *watsoni*, Spence—Chatteris; *colonoides*, Kr.—Chatteris, Holwoods. *Catops sericeus*, Pz.—Chatteris, Holwoods.

SCYDMENIDÆ.

Scydmaenus scutellaris, Müll.* and *collaris*, Müll.—Doddington.

PSELAPHIDÆ.

Pselaphus heisei, Hbst.—Holwoods. *Tychius niger*, Pk.—Chatteris. *Bryaxis fossulata*, Reich.—Doddington.

CORYLOPHIDÆ.

Scricoderus lateralis, Gyll.—Doddington.

PHALACRIDÆ.

Phalacrus corruscus, Pk.—generally distributed; *caricis*, Stm.—Wicken. *Olibrus corticalis*, Pz.—generally distributed; *æneus*, F., and *millefolii*, Pk.—Chatteris. *Stilbus testaceus*, Pz.—generally distributed; *atomarius*, L., and *oblongus*, Er.—Chatteris.

COCCINELLIDÆ.

Subcoccinella 24-punctata, L.—Doddington, Wood Walton. *Hippodamia variegata*, Goeze.—Chatteris, Warboys. *Adalia bipunctata*, L.—Chatteris. *Anatis ocellata*, L.—Warboys. *Coccinella 10-punctata*, L.—generally distributed; *11-punctata*, L.—Chatteris Acre Fen; *7-punctata*, L.—Doddington. *Halysia 14-guttata*, L.—Chatteris, Warboys; *18-guttata*, L.—Chippenham; *conglobata*, L.—generally distributed; *22-punctata*, L.—Chatteris, Warboys. *Micraspis 16-punctata*, L.—Chatteris, Warboys. *Chilocorus similis*, Rossi, and *Exochomus 4-pustulatus*, L.—Doddington, Warboys. *Rhizobius litura*, F., and *Coccidula rufa*, Hbst.—generally distributed.

ENDOMYCHIDÆ.

Symbiotus latus, Redt., and *Mycetæa hirta*, Marsh.—Chatteris.

EROTYLIDÆ.

Dacne humeralis, F., and *rufifrons*, F.—Chatteris. *Triplax russica*, L.—Chatteris (old record); *ænea*, Schall.*—Cambridge.

HISTERIDÆ.

Hister unicolor, L.—Chatteris, Holwoods; *merdarius*, Hoffm.* and *cadaverinus*, Hoffm.—Chatteris; *purpurascens*, Hbst.—Chatteris Acre Fen, Holwoods, v. *niger*, Er.—Holwoods (commoner than the type); *carbonarius*, Ill.—Chatteris; *12-striatus*, Schr.—Chatteris Acre Fen; *bimaculatus*, L.—Chatteris. *Dendrophilus punctatus*, Hbst., and *Gnathoncus nanctensis*, Mars.—Chatteris. *Saprinus nitidulus*, Pk.—Chatteris, Holwoods, Wood Walton; *æneus*, F.—Holwoods; *virescens*, Pk.—Chatteris (old record). *Onthophilus striatus*, F.—Chatteris, Holwoods.

MICROPEPLIDÆ.

Micropeplus staphylinoides, Marsh.—Madingley; *margaritæ*, Duv.—Chatteris.

NITIDULIDÆ.

Brachypterus pubescens, Er. Wicken; *urticæ*, F.—Chatteris, Wood Walton. *Cercus pedicularius*, L., and *bipustulatus*, Pk.—Horseway; *rufilabris*, Latr.—Chatteris. *Epuræa æstiva*, L. generally distributed; *melina*, Er., and *florea*, Er.—Warboys. *Omosiphora limbata*, F.*—Chatteris. *Microrula melanocephala*, Marsh.—Chatteris, Warboys. *Nitidula bipustulata*, L.—Chatteris, Holwoods; *4-pustulata*, F.—Chatteris; *rufipes*, L.—Chatteris, Warboys. *Soronia grisea*, L.—Chatteris, Holwoods, Doddington. *Omosita colon*, L.,* and *discoidea*, F.—Chatteris. *Pocadius ferrugineus*, F., and *Meligethes rufipes*, Gyll.—Warboys; *fulvipes*, Bris.*—Holwoods; *æneus*, F., and *viridescens*, F.—generally distributed; *viduatus*, Stm.*—Holwoods; *picipes*, Stm.—Chatteris; *symphyti*, Heer*—Holwoods; *solidus*, Stm.*—Fleam Dyke. *Cychramus luteus*, F., and *fungicola*, Heer.—Warboys. *Ips 4-punctata*, Hbst.*—Chatteris. *Rhizophagus perforatus*, Er.*—Holwoods; *parallelocollis*, Gyll.*—Holwoods.

TROGOSITIDÆ.

Nemosoma elongatum, L.—Chatteris, one locality from which it has now disappeared. *Tenebroides mauritanicus*, L.—Cambridge.

LATHRIDIIDÆ.

Lathridius lardarius, De G.—generally distributed. *Enicmus minutus*, L.—generally distributed; *transversus*, Ol.—generally distributed. *Cartodere ruficollis*, Marsh.,* and *Corticaria pubescens*, Gyll.—Chatteris; *denticulata*, Gyll., and *umbilicata*, Beck*—Holwoods; *fulva*, Com.—Chatteris, Holwoods; *fene-stralis*, L.*—Chatteris. *Melanophthalma gibbosa*, Hbst.—generally distributed; *fuscata*, Hum.—Doddington, Warboys.

CUCUJIDÆ.

Ismarus bipunctatus, F.,* and *Cathartus advena*, Waltl.—Chatteris.

BYTURIDÆ.

Byturus sambuci, Scop.—Doddington; *tomentosus*, F.—Holwoods, Cambridge, Warboys.

CRYPTOPHAGIDÆ.

Telmatophilus caricis, Ol.—Chatteris; *brevicollis*, Aub.—Chatteris, Horseway. *Antherophagus nigricornis*, F.—Chatteris, Warboys. *Cryptophagus lycoperdi*, Hbst.,* *setulosus*, Stm.,* *pilosus*, Gyll., *scenicus*, L., and *dentatus*, Hbst.—Chatteris; *acutangulus*, Gyll.—Chatteris, Cambridge; *affinis*, Stm.—generally distributed; *pubescens*, Stm.—Chatteris. *Micrambe vini*, Pz. Chippenham. *Atomaria linearis*, Steph.—Chatteris, Holwoods; *munda*, Er.,* and *atra*, Hbst.—Chatteris; *pusilla*, Pk.—Holwoods; *atricapilla*, Steph.—Chatteris, Doddington, Madingley; *berolinensis*, Kr.—Holwoods; *analis*, Er., and *apicalis*, Er.—Chatteris. *Ephistemus gyrinoides*, Marsh.—Chatteris, Holwoods.

SCAPHIDIIDÆ.

Scaphisoma boleti, Pz.—Holwoods.

MYCETOPHAGIDÆ.

Typhæa fumata, L.—generally distributed. *Triphyllus suturalis*, F.—Chatteris. *Mycetophagus 4-pustulatus*, L.—Holwoods; *multipunctatus*, Hellw.—Chatteris.

DERMESTIDÆ.

Dermestes vulpinus, F.—Cambridge; *murinus*, L.—Chatteris, Warboys; *lardarius*, L.—Holwoods, Cambridge. *Attagenus pello*, L.—Chatteris. *Tiresius serra*, F.—Chatteris, Holwoods. *Anthrenus varius*, F.—Chatteris Acre Fen.

BYRRHIDÆ.

Byrrhus pilula, L.—Chatteris, Mepal; *fasciatus*, F.—Mepal. *Cytilus varius*, F.—Chatteris, Warboys.

GEORYSSIDÆ.

Georyssus pygmaeus, F.—Babraham.

PARNIDÆ.

Elmis volkmari, Pz., and *Limnius tuberculatus*, Müll.—Babraham. *Parnus prolifericornis*, F.—Mepal.

LUCANIDÆ.

Dorcus parallelipedus, L.—Holwoods.

SCARABÆIDÆ.

Onthophagus vacca, L.—Holwoods; *fracticornis*, Preyss.—Chatteris, Holwoods. *Aphodius erraticus*, L.—Chatteris Acre Fen, Holwoods; *fossor*, L.—generally distributed; *hemorrhoidalis*, C.—Chatteris, Mepal, Holwoods; *finetarius*, L., and *ater*, De G.—generally distributed; *constans*, Duft. —Chatteris, Mepal; *granarius*, L.—Chatteris, Holwoods; *nitidulus*, F., and *rufescens*, F.*—Chatteris Acre Fen; *lividus*, Ol.*—Mepal; *pusillus*, Hbst.—Chatteris, Holwoods, Mepal; *merdarius*, F.—Chatteris, Holwoods; *inquinatus*, F.—Chatteris, Chippenham; *punctatosulcatus*, Stm., and *prodromus*, Brahm.—generally distributed; *contaminatus*, Hbst.—Holwoods; *luridus*, F.—Chatteris, Holwoods, Cambridge; *rufipes*, L.—generally distributed; *depressus*, Kug.—Chatteris Acre Fen. *Oxyomus porcatu*, F.—Chatteris, Holwoods. *Ægialia arenaria*, F.,* *Geotrupes stercorarius*, L., *spiniger*, Marsh., and *vernalis*, L.—Chatteris. *Trox scaber*, L.—Chatteris, Holwoods. *Melolontha vulgaris*, F.—Chatteris.

(To be continued).

Host and parasite emerging from one larva.—In the Entomologist's Record, Vol. XV, p. 118, I recorded an instance of this. I recently communicated the parasite and other documents to Mr. Claude Morley, and he tells me that the parasite is not an Ichneumon as stated, but a Braconid, *Microplitis tuberculifera*, Wesm. My error is, of course, merely the result of the habit of all Lepidopterists to dub every hymenopterous parasite an Ichneumon. The parasite seems to be not uncommon in Britain, and has various Lepidopterous hosts,

amongst which *Orgyia* (in this case *aurolimbata*) had not previously been noted. Mr. Morley gives me references to various similar records, from which I gather that they are very few in number, and that in only one of them has the name of the parasite been reported.

In the Ent. Mo. Mag., Vol. I, pp. 73 and 235, are translations from the Ann. Soc. Ent. Fr., 1864, p. 158, and Bulletin, same year, p. xxxv, concerning *Diptera* and a moth being afforded by a larva of *A. caja*. In the Entomologist, Vol. III (1866), A. von Glemn records two parasitic larvæ and an imago in the case of *A. atropos*. In Ent. Mo. Mag., Vol. XX, p. 227, Dr. Hearder describes killing a parasite emerging from a larva of *D. furcula*, the dead remains being left *in situ*, a moth duly emerged with a slightly crippled hind wing. Mr. Morley records an instance in British Ichneumonids, II, p. 263, of an *Apanteles congestus* and a moth being afforded in the case of *Z. filipendulæ*. This case seems not quite free from a suspicion that the cocoon might have been spun at a point where another larva had provided the Ichneumon cocoon. Mr. Morley also refers in the same note to a curious story in Mag. Nat. Hist., 1834, p. 60, possibly an instance of co-operative cocoon making rather than of survival after parasitism. These seem to be all the items Mr. Morley knows of, in English magazines. The *Microplitis tuberculifera*, Wesm., is dealt with systematically by Marshall, Trans. Ent. Soc. Lond. 1885, p. 235; André, Bracon. d'Europe, I, p. 510; and by Mr. Morley in the Entomologist, 1906, p. 103.

So far as one can generalise from these few facts, it would seem that the host may survive the attack and emergence of the parasite, only in cases where the parasite is a comparatively small species, usually when only one or two parasites are present of a species that is gregarious in its host. This possible explanation is given by Mr. Morley (*l.c.*).—T. A. CHAPMAN, Betula, Reigate: November, 1913.

Amara alpina, F., at Braemar.—In the early part of last June I had a couple of days collecting at Braemar. The whole working time was spent on Mount Morrone, which rises to a height of 2,819 feet, and I only worked above the 2,000 feet line. I was fortunate enough to capture three specimens of this scarce species, all under stones lying amongst the heather. One was the variety with dull reddish elytra, the other two were of the ordinary type colour. I took most of the usual mountain *Carabidæ*, such as *Miscodera arctica*, Payk., *Harpalus quadripunctatus*, Dej., *Cymindis vaporariorum*, L., *Patrobus septentrionis*, Dej., *Calathus nubigena*, Hal., and *Harpalus latus* v. *erythrocephalus*, F. In deer dung, amongst swarms of *Aphodius lapponum*, Gyll., I got one *A. nemoralis*, Er. My visit was too hurried a one to allow any real attempt to work the moss, but I tried two or three likely looking spots with very poor success. The only other beetle worth recording was *Anthonomus conspersus*, Desbr., beaten off mountain ash by the Dee side.—T. HUDSON BEARE, 10, Regent Terrace, Edinburgh: November 15th, 1913.

Neuraphes angulatus, Müll., in Scotland. — On the afternoon of October 25th, I captured two specimens of this species by cutting tufts on a wooded bank at Hawthornden. I can find no previous record of its occurrence in Scotland. With it I found *Choleva anisotomoides*, Spence (not uncommonly); a few specimens of *C. wilkini*, Spence; and a couple of *C. spadicea*, Sturm. This latter has only been recorded from two or three Scottish localities. *Phlebobium clypeatum*, Müll., was in some numbers. — T. HUDSON BEARE: November 15th, 1913.

Trypodendron domesticum, L., and *Phleophthorus rhododactylus*, Marsh., in Forfarshire. — On November 1st I found, in the neighbourhood of Careston, numerous galleries of *T. domesticum* in some dead beech trees which were still standing. The timber was fairly sound and very dry. On the same day, near Maisondieu Farm, Brechin, I came across *P. rhododactylus* on whin and broom stems, and secured both larvæ and beetles. — J. W. MUNRO, Natural History Department, Aberdeen University: November 8th, 1913.

Phleophthorus rhododactylus, Marsh., in Aberdeenshire. — This beetle is very plentiful on whin and broom stems along the River Dee, near Bieldside. On November 5th I met with it in great numbers in this district. — J. W. MUNRO.

Cryptorrhynchus lapathi, L., in Forfarshire. — In my note on *C. lapathi* (*antea*, xlix, p. 257) I omitted to record its occurrence in Forfarshire. In April I found its frass and galleries on willows growing on the banks of the Esk and the Crook at their junction near Stracathro. At the time I had no leisure to search for the weevil. — J. W. MUNRO.

Tinea tedella, Cl., in Aberdeenshire. — This moth is proving harmful to young spruce trees in Haylehead Woods near Aberdeen. The larva eats into the needles at the tips of the side-shoots and sometimes spins them together. — J. W. MUNRO.

Eriophyes tristriatus, var. *erineum*, Nal., in Forfarshire. — On October 28th I found galls of this Acarid on the leaves of a walnut tree in the Den Nursery, Brechin. It is not common in the north. — J. W. MUNRO.

An aberration of *Colias edusa*, F., ♀. — Among a number of *Colias edusa* taken by me on August 21st in the lucerne-patches on the cliffs near Eastchurch, Isle of Sheppey, there is one aberration of such singular beauty that, at the suggestion of my friend Mr. G. T. Porritt, I am tempted to give a description of it.

The specimen is a ♀ of full size, apparently only just emerged from the pupa. The fore-wings are of the normal bright saffron-orange colour, with less than the usual suffusion of black scales at the base; the black border, which is rather more angulated internally than in most examples, has the nervures in

its apical portion strongly marked in pale golden-yellow, and the pale spots in this region are much enlarged and confluent, forming a clear subrectangular patch extending from the costa to between the 4th and 5th nervures. The fringe is very rosy, with a well-defined series of small yellow spots at the extremity of each nervure. The suffusion of black scales on the disc of the hind-wings is much less than usual, and the deep orange discoidal spot is clear and well defined; the hind-margins are broadly golden-yellow, clearly defined on the inner edge, with the usual dark border almost entirely absent; it being reduced to a small blackish suffused subcostal spot, and three similar small spots at the ends of nervures 4, 5, and 6, these being slightly larger and more pronounced on the left side; the inner margins are very clear and pale. Beneath, the specimen is quite normal. The general effect of the insect is very light and brilliant, but I did not notice it as different on the wing from ordinary examples of the species. It is hoped that a figure of this beautiful aberration may be given at some future time in this Magazine. - JAMES J. WALKER, Oxford: December 9th, 1913.

Hemianax ephippiger, Burm., in Ireland. -Mr. J. N. Halbert, of the National Museum, Dublin, has just sent to me for determination a beautiful female example of *Hemianax ephippiger*, Burm., taken in Herbert Park, Dublin, on October 12th last; its captor, Mr. Albert Douglas, reporting that he found it at rest on the grass. This is the second example of this interesting species which has found its way to the British Isles. It will be remembered that the late Mr. McLachlan, after careful inquiry into the details connected with its capture, recorded (Ent. Mo. Mag., XXXIX, p. 96) the first example, which was taken at Devonport in February, 1903. Mr. McLachlan's note gives some information as to the migratory habits of the species and about its distribution. Swarms appearing in the South of Europe are usually supposed to be of African origin, and, as Mr. McLachlan mentions, it has occurred singly at Zurich, where it was taken by Dr. Ris, and even as far north as Brussels. The only two European specimens in my collection were given to me by Miss Fountaine, who took them in Corsica. Lt.-Col. Nurse once saw it at Quetta, in thousands. It will be very interesting to hear whether the species has occurred elsewhere in Europe during the past season.—KENNETH J. MORTON, 13, Blackford Road, Edinburgh: November 17th, 1913.

Synonymy of Euphorus bistigmaticus, Morl., and *Neoneurus halidaii*, Marsh.—In this Magazine (1909, p. 212) I described "an undoubted Euphorid" (*Braconidæ*), from examples captured at Weybridge, hovering over ant's nests, and I am still of the opinion that the species belongs to the *Euphorinæ*. So little are these parasites worked that—except in Entom. Rec. 1913, p. 93—I am not aware that it has since been mentioned in literature; and it has been my lot to discover that the same species was described by the Rev. T. A. Marshall under the above name in André's *Species des Hyménoptères d'Europe*, Vol. XVbis, 1897, p. 199, at the end of the "Areolaires," with a very fair figure (pl. x, fig. 3). Even then it was anything but new, for the genus had been enunciated by Haliday in the old Entom. Mag., V, 1838, p. 213, "areola radiali

appendiculata, prædiscoidali autem effusa . . . Genus *Muropæam*. The wings only of the insect were known, as drawn by Haliday, and copied by Van Vollenhoven. They differ widely from those of any other Braconid. "I have named the species *N. halidaii*, and placed it provisionally as an aberrant form of the *Areolarii* next after *Orgilus*, in André's species," says Marshall (Ent. Mo. Mag., 1897, p. 149). I am not aware that the original drawing was published: Vollenhoven's is in "Schetsen ten gebruike bij de studie der Hymenoptera," 1868, pl. vi, though the insect is certainly unknown outside England, except by my recent Luxemburg record. Marshall, writing from Botusfleming in June, says: "I have been gratified by the re-discovery here of Haliday's long lost genus *Neoneurus*. I have taken both sexes by sweeping flowers in the fields"; and "Cornouailles, capturé deux fois sur les ombellifères" (*loc. cit.*). It was not taken in time for insertion in his Monograph of British *Braconidæ*, and I there find no mention of the wing.—CLAUDE MORLEY, Monk Soham House, Suffolk: December 6th, 1913.

Dolichopus caligatus, Wahlb., in Perthshire—I have a male of this fly taken at Aberfoyle on August 21st, 1906. The species has not hitherto been recorded from Britain, and Mr. Collin who has kindly examined my specimen, tells me it is the first British example he has seen. *D. caligatus* comes near *lineaticornis*, Zett., in our list, but is easily distinguished by its silvery-white epistoma. There is a good (English) description of this apparently rare species in Lundbeck's "Diptera Danica," Part V, 1912. — A. E. J. CARTER, The Retreat, Monifieth: November, 1913.

Didea alneti, Fln., in Gloucestershire.—In view of the scarcity of this species, it may be desirable to record that I was fortunate enough to meet with a female specimen in a wood near Stroud on July 30th last. It was boxed on a bramble flower, and when taken the abdomen had a semi-transparent greenish metallic appearance, which afterwards (*i.e.*, on the way back to the house at which I was staying) resolved itself into the normal black with whitish bars. Being quite a tyro in the matter of *Diptera*, to which I am just beginning to pay some attention, I do not know whether it is customary for Syrphids to alter in colouring after having been some time emerged from the puparium, but certainly think this must have been so in the present case.—C. NICHOLSON, 35, The Avenue, Hale End, Chingford, Essex: December, 1913

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: Meeting held at the Royal Institution, Colquitt Street, Liverpool, on Monday, October 20th, 1913. —MR. F. N. PIERCE, F.E.S., President, in the Chair.

Exhibitions were as follows:—Mr. W. Mansbridge brought a long bred series of *Hadena glauca* from Burnley, some of which showed a strong melanie

tendency; also from Burnley, the melanic variation of *Ematurga atomaria*; *Hyria muricata*, purple form, and *Cænonympha typhon* var. *rothliebii*, from Witherslack; *Nyssia zonaria* from the Crosby Sandhills, and the insects captured on the occasion of the Society's field meeting at Mold on June 7th, 1913, including *Lobophora viretata*, *Cnephasia musculana*, *Capua favillaceana*, *Argyro-lepia hartmanniana* and *Agriopis aprilina* (larva). Mr. R. Tait showed a long and variable series of the beautiful melanic form of *Boarmia repandata* from Penmaenmawr, also bred *Agrotis lucernea* from the same district; varieties of *Abraxas grossulariata*, including ab. *varleyata*, bred from various localities in 1913; *Aplecta nebulosa* var. *robsoni* and *Geometra papilionaria* from Delamere; *Hecatera serena* and *Calligenia miniata* from Sussex. Mr. Tait also gave an account of his collecting holiday in Sussex, from which it appeared that *Lepidoptera* had been as difficult to obtain in the south of England as in the north during the past summer. Mr. Johnson exhibited a long and fine series of *C. typhon*, including some very dark forms, from Witherslack; also *Acidalia fumata*, *Nisoniades tages*, and *Lycena astrarche* from the same place. Dr. P. F. Tinne, various species of autumn *Lepidoptera* from the North of Ireland, including a nicely varied series of *Cidaria truncata*, several being the var. *centumnotata*. All the members present reported a very poor season from a collector's point of view.

Monday, November 17th, 1913.—The President in the Chair.

Mr. W. Bowater, B.D.S., F.E.S., Brandon Lodge, Russell Road, Moseley, Birmingham, and Arnold W. Hughes, 33, Lacy Road, Everton, Liverpool, were elected Members of the Society.

Dr. P. F. Tinné read a paper entitled "Insects concerned in the Pollination of Plants," in which he dealt very thoroughly with the part played by insects in this important process. Dr. Tinne gave many interesting examples, chiefly drawn from the *Hymenoptera* and *Lepidoptera*, as to the methods of the various species; he described the structure of the floral organs of plants which facilitated the operations of the insect principally concerned in the pollination, and also indicated how unwelcome or inefficient visitors were repelled and imprisoned or otherwise prevented from interfering with the process.

The following exhibits were made:—by Mr. W. A. Tyerman, a fine bred series of *Notodonta dromedarius* var. *perfusca*, *Diunthæcia nana*, *D. cucubali*, and *Phibalapteryx vittata* from the Southport district; also *Sphinx convolvuli*, *Nemeophila plantaginis*, and *Callimorpha dominula*. A specimen of *Chærocampa nerii* captured by a farmer near Ainsdale on September 14th, 1913; it was in a very dilapidated condition but easily recognisable, and it forms a very interesting addition to our county list. Mr. W. Mansbridge showed a short series of *Thera variata* and pale forms of *T. obeliscata* for comparison.—WM. MANSBRIDGE, Hon. Secretary.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 Thursday, October 9th, 1913.—MR. A. E. TONGE, F.E.S., President, in the Chair.

Large additions to the Society's reference collection of British *Lepidoptera* from Mr. W. G. Dawson were announced. Mr. Lucas read a paper: "The Short-horned Acridians of the British Isles," and illustrated his remarks with lantern slides of all the species. Mr. Ashdown exhibited *Lepidoptera* taken by him in Switzerland in June and July last. Mr. Colthrup, a snail shell from which he had bred a Dipteron presumably parasitic in the snail. Mr. Andrews, a scarce Dipteron, the Syrphid, *S. guttatus* taken at Bexley in August. Mr. Step, living examples of the ant's-nest Isopod, *Platyarthrus hoffmannseggii*, found in a nest of *Formica fusca*. Mr. West (Ashted), enlarged photographs of the same rare woodlouse. Mr. Curwen, specimens of *Syntomis pncea* and its var. *pflumeri*, in which the white spots were reduced in size and number, from Pallanza and Iselle, together with specimens of the rare *Nacelia ancilla*. Mr. Newman, picked series from a large number of bred *Melitæa aurinia*, from County Clare and Oban. The variation was extremely small, although the larvæ were samples of many broods. Mr. Tonge, a series of *Coremia quadrifasciaria* bred from a ♀ taken at Albury, Surrey, showing but little variation.

Thursday, October 23rd, 1913.—The President in the Chair.

Prof. E. B. Poulton, F.R.S., gave an account of the mimicry exhibited by the Nymphalines of North America, illustrating his remarks by specimens and lantern slides. Mr. W. J. Kaye exhibited a collection of the *Sphingitæ* found in the Island of Trinidad. There were about 40 species in all. Mr. Sheldon, series of species taken by him near Albarracín, Central Spain, including *Plebeius zephyrus* var. *hesperica*, *Agriades thetis* ab. *rufolumulata*, *A. thersites*, and *Glaucopsyche cyllarus*. Dr. Chapman was of opinion that *A. thersites* only occurred where sainfoin was indigenous. Mr. L. W. Newman, *Lepidoptera* from Co. Clare, Co. Cork, and Killarney, including very light *Aplecta nebulosa*, very dark *Luperina cespitis*, *Aphantopus hyperantus* with greenish shade on the underside, *Egeria scolixformis*, bred *Dianthuscia capsophila*, *D. luteago* var. *barrettii*, etc., etc.; he stated that the weather was very bad from April to the end of September. Mr. A. E. Tonge, a specimen of *Argynnis aglaia* with a strongly marked blotch formed by the coalescence of several spots on the forewings.—HY. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON : Wednesday, November 5th, 1913.—MR. G. T. BETHUNE-BAKER, F.L.S., F.Z.S., President, in the Chair.

Dr. A. P. Semenov Tian-Shanski was elected an Honorary Fellow in the place of the late Prof. O. M. Reuter.

The following gentlemen were elected Fellows of the Society:—Messrs. Hugh Warren Bedford, Church Felles, Horley; Harold S. Cheavin, F.R.M.S.,

F.N.P.S., Clematis House, Somerset Road, Huddersfield; Charles Alban William Duffield, Stowting Rectory, Hythe, and Wye College, Kent; W. Egmont Kirby, M.D., Hilden, 46, Sutton Court Road, Chiswick, W.; Louis Meaden, Melbourne, Dyke Road, Preston, Brighton; F. V. Bruce Miller, Livingston, N. Rhodesia; Alexander David Peacock, 137, Wingrove Gardens, and Armstrong College, Newcastle-on-Tyne; H. Ananthaowamy Rao, Curator of the Govt. Museum, Bangalore, India; Percival Nathan Whitley, New College, Oxford, and Brankwood, Halifax.

The question of the change of title of the Society was opened for discussion, but the preponderance of feeling appeared to be somewhat against any change.

The President brought before the meeting the necessity of forming a fund for the care of that portion of Wicken Fen left by the late Mr. G. H. Verrall to the National Trust, and at his request Mr. Rowland-Brown expressed his readiness to act as Treasurer for any subscriptions given by Fellows of the Society.

Dr. G. B. Longstaff exhibited a series of 17 *Thais rumina*, L. (including a ♀ of the var. *canteneri*, Feld.), taken in March, 1913, at Ronda, in Andalusia, and called attention to the characters suggestive of a distasteful butterfly. Mr. W. J. Lucas, three species of *Panorpa*, viz., a female of the scarce Scorpion-fly *Panorpa cognata*, *Panorpa germanica*, L., and *Panorpa communis*, L. Mr. H. Lupton, a specimen of *Thalpochara ostrina*, taken in the middle of June, 1913, about four miles from Ilfracombe. Also two varieties of *Dianthæcia luteago*, taken in the middle of the same month on the coast of N. Devon. Dr. G. D. H. Carpenter read notes in connection with his exhibit of *Epitoxa albicincta*. He also exhibited a case of miscellaneous insects and communicated notes upon them. Mr. Donisthorpe, ♂ ♂, winged ♀ ♀ and a deãlated ♀ and ♀ ♀ of the very rare ant *Solenopsis fugax*, Latr., taken at Blackgang, Isle of Wight, on August 26th, 1913. Mr. E. E. Green, an aberrant example of *Pyrameis (Fanessa) indica*, Herbst, from Ceylon. Comm. J. J. Walker, a ♀ specimen of the gigantic Neuropteran, *Corydalis orientalis*, McLach., taken by a native collector at Chuchow. Mr. L. W. Newman, the following Heterocera:—(1) *Calymnia (Cosmia) trapezina*; a melanic ♀ worn specimen taken at sugar in Bexley Woods. (2) *Zonosoma (Ephyra) annulata* and *pendularia*; a long and very varied series of both species, showing extreme light, dark, and intermediate forms, and one very pink *Z. pendularia*. (3) A series of hybrid *Z. pendularia* ♀ and *annulata* ♂, specimens showing the markings of *pendularia* most pronounced and the coloration of *annulata* prominent.

The following papers were read:—"New or little-known *Heterocera* from Madagascar," by Sir G. H. Kenrick, Bart., F.E.S. "The *Culicidæ* of Australia," by Frank H. Taylor, F.E.S. "Descriptions of New Species of *Staphylinidæ* from India," by Malcolm Cameron, M.B., R.N., F.E.S. "*Pseudacræa eurytus hobleji*, Neave, and its models on Bugalla Island, Lake Victoria, with other members of the same combination," by G. D. H. Carpenter, B.A., M.D., F.E.S. "*Pseudacræa boisduvali*, Doubl., and its models with special reference to Bugalla Island," by the same. "The inheritance of small variations in the pattern of *Papilio dardanus*, Brown," by the same.

Wednesday, November 19th, 1913.—The President in the Chair.

It was announced that the Council had decided to make an annual grant of two guineas towards the maintenance of Wicken Fen.

The following gentlemen were elected Members of the Society:—Messrs. B. G. Adams, 15, Fernshaw Road, Chelsea; Barnard Ormiston Dickinson, B.A., 57, Castelnau, Barnes, S.W.; Alfred Oliver Rowden, 3, Archibald Road, Exeter; Oscar Whittaker, Ormidale, Ashlands, Ashton-upon-Mersey, Cheshire.

The following Fellows were nominated by the Council as Officers and Council for next year:—*President*, Mr. G. T. Bethune-Baker, F.L.S., F.Z.S.; *Treasurer*, Mr. A. H. Jones; *Secretaries*, Commander J. J. Walker, M.A., R.N., F.L.S., and Rev. G. Wheeler, M.A., F.Z.S.; *Librarian*, Mr. G. C. Champion, A.L.S., F.Z.S.; *Other Members of the Council*, Messrs. E. A. Butler, B.A., B.Sc., J. E. Collin, S. Edwards, Dr. H. Eltringham, M.A., D.Sc., F.L.S., Messrs. C. J. Gahan, M.A., A. E. Gibbs, F.L.S., F.Z.S., E. E. Green, G. Meade-Waldo, Dr. G. W. Nicholson, Hon. N. C. Rothschild, Messrs. H. Rowland-Brown, M.A., and C. J. Wainwright.

Mr. A. H. Jones exhibited specimens of both sexes of *Plebeius zephyrus*, var. *hesperica*, taken by him in June last at Albarracin in Spain; also from Albarracin, *Melitæa desfontainii*, var. *batica*, Rbr., the Spanish form of *M. desfontainii*, Godt. (an Algerian butterfly). Mr. E. E. Green, two Pierid butterflies of distinct genera, *Appias libythea*, Fab., ♂, and *Teracolus limbatus*, Butl., ♀, taken in coilû at Aripu, Ceylon. Mr. W. J. Kaye, a large and very variable series of *Heliconius doris*, L. Dr. Chapman, some *Erebias*, showing parallel variation in several species in different localities. He raised the question whether this was or was not due to mimicry. A considerable discussion followed. Dr. F. A. Dixey, a drawer containing specimens of the genus *Pieris*, with drawings of their scent-scales, and remarked upon them. Mr. A. Bacot, slides showing the development of the Plague bacilli in the alimentary canal of the Flea, and the method of infection through the mouth, and read an important paper on the subject. Dr. K. Jordan, some specimens of a lepidopterous larva discovered by the Rev. A. Miles Moss, F.E.S., who, when collecting near Para noticed a Saturniid caterpillar with black intersegmental bands and long branched spines, a species of *Automeris*, some of the black bands of which appeared to be swollen. To his amazement these swellings, when touched, quickly slid over the back of the caterpillar to the other side with the hurried motion of a Pyralid larva, and indeed turned out to be small lepidopterous larvæ as black and glossy as the bands of the *Automeris* caterpillar.

The following papers were read:—"Revision of the Mexican and Central American *Malachiidae* and *Melyridæ*, with descriptions of new species," by George Charles Champion, F.Z.S. "Four new genera and species of *Hymenoptera* from Australia," and "Three new species of Australian *Hymenoptera*," by A. A. Girault, communicated by A. M. Lea, F.E.S., Govt. Entomologist, South Australia.

THE LARVÆ OF *AGRIADES DIMON* AND *PLEBEIUS*
ARGYROGNOMON.

BY T. A. CHAPMAN, M.D., F.Z.S.

(PLATES I-VII.)

In the summer of 1912 I visited the Isère Valley, in which Bourg St. Maurice is a good centre for Entomology, but is not equipped with any high-class accommodation. Val d'Isère, a village close to the head of the valley, at 6,060 feet, is also a good centre, and we found the Hotel Parisien, though primitive in its architecture, most satisfactory in all essential respects. As the railway to Bourg St. Maurice was nearing completion, no doubt this district will experience the results of being more accessible, and a better hostelry at that town will probably soon be found. Our excursion was extended over the Petit St. Bernard to Pré St. Didier and Courmayeur.

My hopes of making some progress in my knowledge of *Agriades thersites* on this excursion were disappointed, though I did meet with that species on the wing at Bourg St. Maurice on the last days of my visit. I especially examined carefully the plants of Sainfoin (*Onobrychis*) whenever I met with it in quantity, thinking I might meet with the larva of *thersites*. This did not happen, but at Pré St. Didier I obtained a number of larvæ of *A. damon*, and in the Val Veni, at somewhere about 5,000 feet, again found it sparingly along with an abundance of those of *P. argyrognomon*. Both these larvæ have been figured, and though they can hardly be said to be well known, are still no novelties, and *P. argyrognomon* has received some attention as the species whose relations with ants have perhaps been most often referred to. I think, however, that the further short notes on my experience of these in 1912 will not be entirely superfluous.

The previous figures of these larvæ that I have been able to find are :—

Scriba, Beyträge (1790-1793) III, Tab. XV—both species.

Hübner, Geschichte Raupen (1806-1818).

Damon (on *Onobrychis*), Lep. I, Pap. II, gens. A.a. 2. A good figure.

Argyrognomon (on *Melilotus officinalis*), Lep. I, Pap. II, gens. A. a. a. I.

Also good.

Duponchel, *Damon*, Icon. Chen. (1832-1842), Pl. VI, fig. 20, (on *Onobrychis*). Poor copy from Hübner.

Argyrognomon, l.c., Pl. X, fig. 22, from Hübner.

Freyer, Neuere Beitr (1836), *Argyrognomon*, 169 (on *Tetragonolobus siliquosus*).

Hofman, Spuler, Lang, Dubois, &c., all appear to be, like Duponchel, copies from Hübner directly or indirectly; Scriba's, Hübner's, and Freyer's are the only original drawings I have found.

I refer later to an error in the drawings on Plate I.

The larvæ of *A. damon* were found on June 23rd and later dates, most freely in a somewhat shaded field of wild herbage, of which sainfoin was a large part. The field had probably been sown with sainfoin some years before and was gradually returning to an uncultivated state.

One or two larvæ were picked up, but most were obtained by sweeping; the largest number were taken one evening by Mr. Champion in this way, though several rewarded sweeping at midday. It seemed, however, obvious that they came up to the flowering stems to feed in the evening, and that the majority, but not all, spent the day somewhere lower down.

The larva is 13-15 mm. long (Pl. I, figs. 5, 7, 8, 9, magnified nearly $\times 3$), rather flat, green, with a very silky aspect from the white hairs that are especially long on the dorsal and lateral flanges. These flanges are rather pronounced, the "slopes" being almost concave, and the dorsal line is in a trough. Seen dorsally (figs. 5 and 8) the dorsal line is a very dark green; the dorsal flanges are very pale green, rather darker on outer margin, merging in faintly indicated darker and lighter oblique lines on the "slope." The lateral flange is very pale, especially posteriorly, with a reddish line sunk in it. Seen laterally (figs. 7 and 9), there is a trace of yellow line in the dorsal flange and the lateral flange encloses a coloured band, reddish above, whitish-yellow below, but these colours being sunk well beneath the surface, change positions according to angle of view.

The slope is set with very short silky hairs, that seem to be ranged round two central points, one above the other on each segment ("upholstered" hollows). The honey gland is a slightly darker line in some specimens, hardly visible in others. The position of fans on 8th abdominal segment is usually very obvious.

As the larva gets older (preparing for pupation), the hairs of the dorsal flanges become slightly reddish instead of white, and in some specimens the paler lines on the slope become distinct, they are four on each segment, downwards and backwards, the upper almost in dorsal flange, two right across segment and the lowest has room only in front-half of segment. The lines and spaces between them are about equal in width. Many specimens are uniform green, showing no traces of these lines, and are even without the lateral line. Those with the lateral line most distinctly seen, show it best when seen so as to place the white line above the red, both look very deeply sunk, as is frequently the case with the colours of *Lycænid* larvæ.

The pupa varies a little in tint, usually the thorax and wing cases are bright green, the abdomen ochreous; there is a faint dorsal line (darker) and numerous minute hairs. Length, 9.5 mm., greatest width, 3.1 mm. There is the usual waist at first abdominal segment. The summit of meso-thorax is rather high, so that this point is as high as at 3rd abdominal segment. Seen from above, the pupa narrows forward from the abdomen. It is quite free, though it sometimes adheres to the larva skin, and the latter again to some surface. There is no silken pad nor any trace of girth or cocoon.

My first acquaintance with the larva of *P. argyrognomon* in its association with ants was in Carinthia in 1897, when I found a few larvæ on *Vicia lutea*. The larvæ themselves on the plant, some ten to twenty inches from the ground, would have been very inconspicuous, but each was easily found by its being attended by several black ants (*Formica fusca*?), which made an easily seen black point.

In the Val Veni (above Courmayeur), at about 5,000 feet, and about a mile below the Chalet de l'Avizaille, is a rather barren flat, long left by the stream, with stunted spruce and larch; on the intervening spaces is a rather scattered vegetation, including Sainfoin, *Helianthemum*, *Anthyllis*, *Hippocrepis*, etc., etc. The Sainfoin, much less luxuriant than that of the hayfields below, has nearly all the leaves direct from the root-stock, and the flowering-stems are short with one spike and a leaf or two. The leaves of some of these were seen to have been eaten, usually shown by white patches where one cuticle was left uneaten. On searching at the base of these, *Lycæna* larvæ were found which proved to be those of *P. argyrognomon*. Further search showed them to be usually on the stem close to the root-stock, but occasionally on the leaves. It was notable that the inhabited plants were in little groups, with often considerable spaces between in which all the plants were healthy and unaffected. The "healthy" plants were amongst a good deal of other vegetation, largely moss, giving a green, smooth surface to the ground. The affected plants were in coarse sand instead of moss. This sand was in reality material brought up to the surface by a small black ant (*Formica fusca*), and then scattered about the plants, though before this was fully appreciated, it had become only too evident that the plants with larvæ were well patrolled by these ants, as they rapidly got all over one, their crawling being rather annoying, apart from occasional sharp, but not very severe bites. Though the ants were everywhere, they were only in force near the affected plants, which seemed as a rule to be close to or actually on their nests, so that they appeared abundantly as soon as the affected plants were touched.

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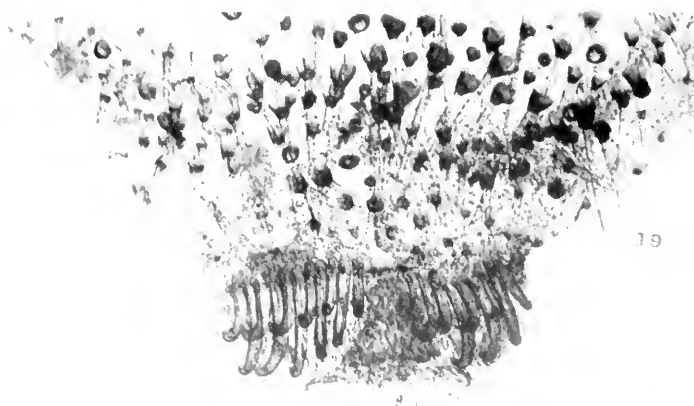
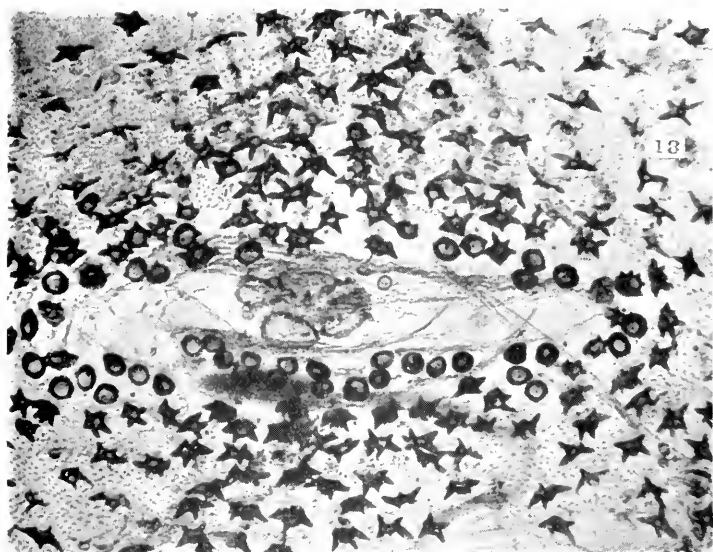
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Photo, A. E. Tongue.

P. argyrognomon. Honey gland and proleg, last stage $\times 114$.

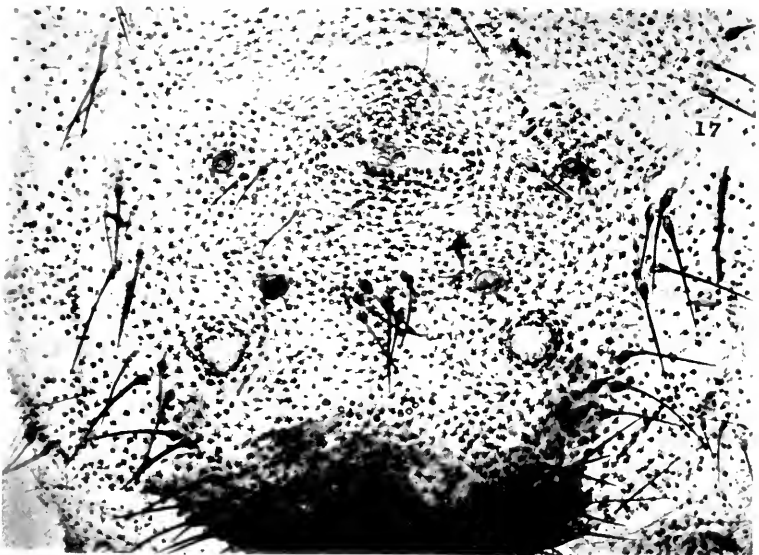
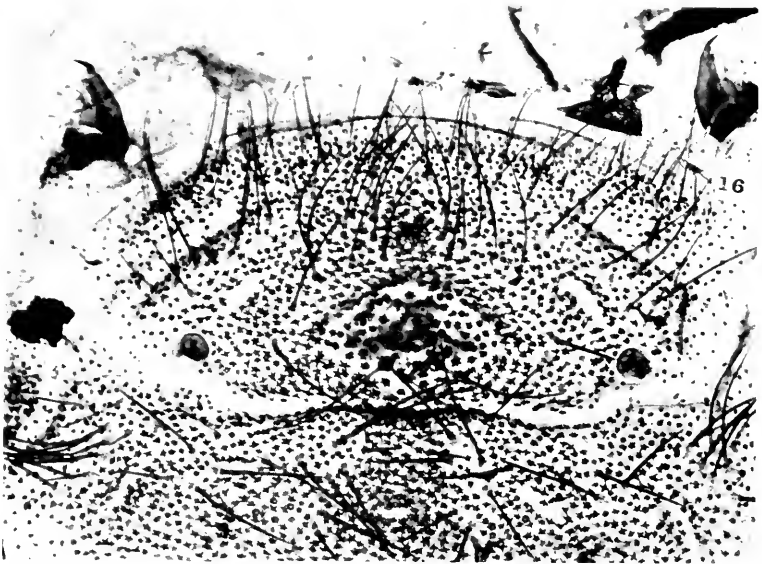
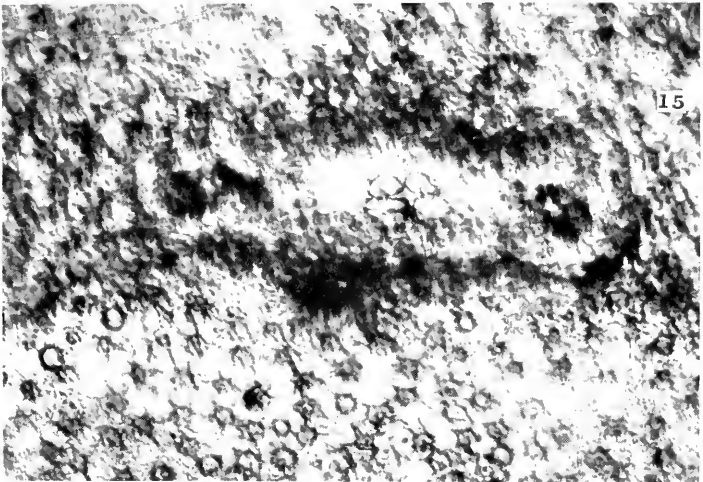
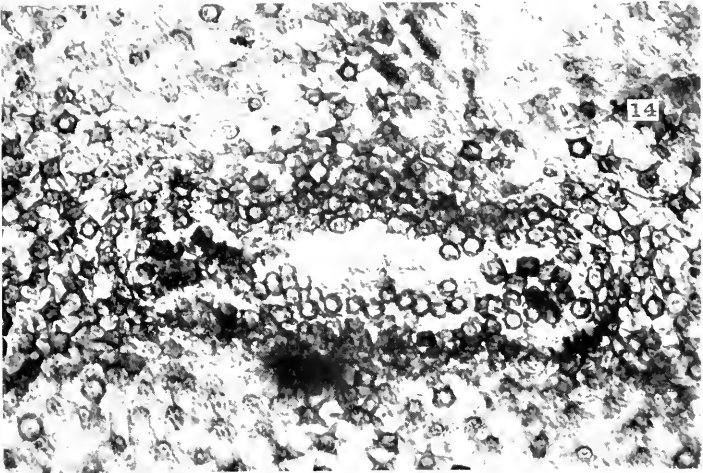


Photo. A. E. Tonge



Photo, A. E. Tonge.

A. damon. Honey gland, last skin $\times 114$.

In two cases an ant was seen actually carrying or trying to carry a larva much larger and many times heavier than itself. In one case, before the plant was in any way disturbed, a larva was seen advancing rapidly up the stem of a leaf, much more quickly than the ordinary pace of a *Lycaena* larva. A closer scrutiny showed that it was actually being carried or dragged by an ant. In the other case, after some interference with the plant, an ant was found to be trying to drag a larva underground and to some extent succeeding. Much the same process they employ with their own larvæ and pupæ when a nest is disturbed. Many of the larvæ down near the root-stock were well covered by the loose material piled up by the ants. How far this condition was due to the larvæ burying themselves, how far to their being guided by the ants, and how far to the ants piling the material over them, could only be settled by much longer observation than was available, but I should fancy that each of these processes had its share in the result. It is certain that the larvæ could not have buried themselves so deeply and so comfortably, if at all, on the unaffected plants. There were usually several, and even half-a-dozen or more larvæ to a plant, and I could not help asking myself the question which had previously occurred to me in regard to the larvæ of *corydon* on *Hippocrepis*: did the butterflies lay eggs only on these affected plants? Supposing they laid on all the plants fairly impartially, were larvæ absent from the unaffected plants because they had perished for want of ant protection, or, as I fancied to be more likely, because the ants collected the young larvæ and carried them to the conveniently placed plants?

Two pupæ (certainly early ones, looking to the abundance of larvæ) were found: one attached to a bit of dead stem, nearly an inch below the surface, the superincumbent material being the lightly and loosely placed coarse sand mixed with vegetable debris piled up by the ants; the other was very similarly placed, but was less disturbed in the discovery, and there was found to be round the pupa an actual cavity, in which were also some ants and two half-grown *argyrognomon* larvæ.

On the *Onobrychis* plants here there also occurred two larvæ of *damon*. *Argyrognomon* were also found on *Helianthemum*, on *Anthyllis*, and also on *Hippocrepis* along with those of *corydon*, but only sparingly on each of these plants.

Larvæ placed on *Hippocrepis* and on *Helianthemum* ate readily in both cases. They were placed on *Anthyllis* only along with sainfoin, and would not touch it with this choice before them. Larvæ fed on *Hippo-*

crepis for a few days appeared to have very pale coloration. It was then too late for any success in testing whether this was a result of the change of food, or merely of an accidental selection of pale larvæ to place on this plant.

These larvæ of *argyrognomon*, 10–13 mm. long (Pl. I, figs. 1, 2, 3, 4, 6, \times nearly 3), presented very great variety in colour and intensity of marking; numerous as they were, one might almost say no two were alike. The commonest form, *i.e.*, the one in which a large number nearly agreed, was a green larva with a dark brown dorsal band, much the broadest in front, edged with white and a white lateral line, rather darker spiracles, a few black dorsal and pale lateral hairs, and the rest of the skin closely studded with points (hair bases), black dorsally and white laterally. Figs. 2 and 4 would be examples in this group, some of which had a little more marking; some were nearer to a uniform green.

An extreme form in the opposite direction is of a rich purple black, the dorsal band darker, edged with white, subdorsal region faintly green tinged, with various oblique lines below. Fig. 3 represents such a larva; again no two quite alike. A good many larvæ made various approaches to this, of which fig. 6 may be taken as an example; and from this to the green form, an intermediate series might be selected, of which fig. 1 would be one form. These intermediates (figs. 1 and 6) were really very handsome, richly coloured caterpillars. The intermediate larvæ, however, by no means represented a regular gradation. Some, for example, of the darkish larvæ have the white lines pink, and the whole larva then presents a ruddy tint.

The markings, in a specimen in which they are well seen, generally a darkish one something like fig. 6, present a purplish black dorsal line with whitish border; a dark band below this has a pale upper margin, uniting at each end of segment with the white line above, forming a pale kidney-shaped mark with greenish-purple centre. Below this dark band, is a double pale greenish line with purplish between, with again purple above the rather bright white lateral line. These purple marks are the usual oblique lines of the slope, and really continue over three segments from before backwards. Below the lateral line is a purple band merging into the greenish underside. The fans are two pale conspicuous spots.

The pupæ are securely fastened by the cremaster and by a slight girth across the first abdominal segment. Length, 9–10 mm., a depression dorsally at 3 mm. from front at junction of thorax and abdomen. Height and width at

mesothorax, 3.3 mm., at third abdominal segment 3.9 mm. in a fairly large specimen. They vary much in colour: some are pale green, with the abdomen rather more yellow, or the thorax, wings, and appendages tending to olive, and a slightly darker dorsal line on abdomen. One or two are very unicolorous, of a very pale yellowish green. In others the abdomen is a dark grass green, the thorax darker, and the wings as if with a wash of black, almost black rather than green. In some the dorsal line is distinctly reddish. In some of the darker examples the wing nervures are very distinct as paler lines; in the lighter ones they do not show, though the tracheæ can be seen in the transparent tissue, best with a lens.

Some of the darker ones preserve much of the larval coloration and markings, this is common in Lycenids, when the pupæ have newly moulted, they retain it for several days. There are a great many very minute hairs, requiring a lens to see them.

Most of the pupæ emerged in a few weeks, periods no doubt affected by change of climate in travelling, but about a dozen of the *argyrognomon* did not emerge, and though they did not look dead, did not seem normal. These laid over the winter, and in the following spring there emerged from each a specimen of an Ichneumon which Mr. C. Morley tells me is *Agrypon anomelas*, Grav. They escape by cutting off a circular lid from the head end of the pupa. It is obvious that the great care taken of these larvæ by the ants affords no complete protection against Ichneumon attacks.

Figs. 1, 2, 3, 4, 6, show various colourings of the larva of *P. argyrognomon*, and as a matter of fact, there are so many intermediate colorings that a dozen or more figures would not exhaust the varieties. The honey-gland, which is fairly conspicuous in the living larva, is shown as on the 8th instead of the 7th abdominal segment in figs. 1 and 3, by some error in counting the segments. It seemed better to reproduce the drawings as originally made, rather than correct them when living larvæ were no longer available. Figs. 5, 7, 8, 9, show various aspects of the larva of *A. damon*. The differences between these figures are more due to attitude and aspect than to any differences in the larvæ, which are very nearly constant in colouring, much, therefore, in contrast to the polymorphic *P. argyrognomon*.

I have added photographs of the skins of the first stage larvæ of *argyrognomon*, and of *argus* (*ægon*) for comparison, $\times 67$. The latter (*argus*) is described in Tutt's Brit. Lep., Vol. X, and the skins of the 2nd and 3rd instars are figured. *Argyrognomon* in the first instar is seen to be rather smaller, and of more delicate texture than *argus* (*ægon*), but the hairs are (all apparently) very decidedly longer

than those of *argus*, even more than half as long again. The disposition of hairs and lenticles is almost identical in the two species, but the prothoracic plate has a rather different outline, and *argus* has lenticles on the 8th abdominal segment that appear to be missing in *argyrognomon*.

Fig. 12 shows the dorsum of the prothorax of the larva (full grown) of *damon* (X30). The prothoracic plate is well in focus, and the stellate hair bases are well seen, and the round bases of the special angular hairs. The crowding of the hair bases elsewhere is great, and is equally seen in Fig. 13, the 7-10th abdominal segments of the same larva. Fig. 13 shows the spiracles, honey-gland, and position of fans. The hairs are not well seen in either photograph. Figs. 14 and 15 show the honey-gland of the same larva (X114). Fig. 14, focussed for the surface, showing the crowding of hairs and lenticles round the margin of the gland. Fig. 15 is focussed deeper, so that the four circles in the bottom of the gland are well seen. I have supposed these circles to be tubercles I and II modified, but whether they are actually glandular structures I do not know.

Figs. 16 and 17 show the ends of the full-grown larva of *argyrognomon*, (X30). Compared with the same parts in *damon* (figs. 12 and 13) there are present dorsal, supra- and sub-spiracular hairs of large size (0.5 and 0.6 mm. long) which are absent in *damon*, but the numerous small hairs are, as judged by their stellate bases, smaller and less numerous. The four circles in the honey-gland are very obvious.

Fig. 18 is the honey-gland (X114) from the same specimen as fig. 17; it exhibits the hair bases and lenticles around the gland, and the four circles at the bottom of the cavity.

Fig. 19 is an enlarged view of a pro-leg of a full-grown larva of *argyrognomon*. There are an anterior and a posterior set of hooks, each in two rows; the central soft extensile pad is well seen.

I was very interested to find in Scriba's *Beyträge* (1790-1793) that the two larvæ I am describing now were also dealt with, practically together, by Chr. Ph. Pezold (who died in 1797) and are figured together on his Pl. XV. The figures are not very good, but the descriptions and histories of the larvæ are excellent. About *A. damon* he says that the larvæ are found on Sainfoin, usually on the stems near the root, but came up into the plant to feed morning and evening, leaving the ribs and under cuticle of the leaves. These skeletonised leaves, and the ants that affect the same plants, and often completely cover the larvæ, make it easy to find them. He says that Esper had observed that this occasionally occurred with the larvæ of *icarus*. In *Fuessly's Magazine* (1785) one also reads that the larvæ of *argus* are covered with ants, which in no way interfered with their wellbeing.

Pezold observed and describes and figures the fans of the eighth abdominal segment. He says they were extended and withdrawn without intermission when the larvæ were feeding. He saw no fluid or other secretion from them, but was able to detect a scent. He failed to notice the honey-gland, but seemed strongly of opinion there was some honey, apparently regarding the fans as closely analogous to the honey-cornicles of *Aphides*. His final remark is very noteworthy: he says, may it not be that the ants, which in the case of the *Aphides* give such assiduous attention for the sake of the humour they exude, find in this case also some similar exudation? that he could detect no such secretion, by no means proved that there was none, and hopes that time may permit him to learn more about it.

It is not impossible that he later discovered all about the honey-gland, but if he did, no record of the circumstance is known.

EXPLANATION OF PLATES I—VII.

Plate I. Figs. 1-9. Coloured figures of the larvæ of *A. damon* and *P. argyrognomon*.

Plate II. Fig. 10. Skin of larva of *P. argyrognomon* in first stage, spread out showing hairs, lenticles, etc., X 67.

Plate III. Fig. 11. Skin of larva of *P. argus* (*ægon*) in first stage, similarly treated, for comparison with fig. 10. X 67.

Plate IV. Fig. 12. Skin of prothoracic dorsum of larva of *A. damon* in last stage, X 30; fig. 13, dorsum of 7th-10th abdominal segments of *A. damon*, X 30.

Plate V. Figs. 14, 15. Honey-gland region of larva of *A. damon* in last stage, X 114; fig. 14, superficially focussed, showing hair-bases and lenticles crowded round the gland; fig. 15, focussed more deeply, showing the four circles on floor of gland.

Plate VI. Fig. 16 Prothorax of last stage larva of *P. argyrognomon*, X 30; fig. 17, dorsum of 7th-10th abdominal segments of same larva.

Plate VII. Fig. 18. Honey-gland of same specimen, X 114; fig. 19, first proleg of same larva, X 114.

Betula, Reigate:

December, 1913.

ON THE OCCURRENCE IN BRITAIN OF THE *CEUTHORRHYNCHUS*
CHALYBÆUS OF CONTINENTAL AUTHORS, WITH REMARKS
 ON SOME ALLIED SPECIES.

BY JAMES EDWARDS, F.E.S.

The small group of species to which the above-named insect belongs is characterised by appendiculate claws and blue or blue-green elytra, of which the interstices bear a single row of semi-erect bristles. Our species of the group in question may be distinguished, *inter se*, as follows:—

- 1 (2) Scape gradually widened to the apex.....*sulcicollis*, Payk.
- 2 (1) Scape distinctly clavate.
- 3 (4) Meso- and metasterna markedly whiter than the rest of the underside by reason of the more closely placed white scales. Pubescence of the head adpressed, not visible in the lateral aspect...*chalybæus*, Germ.
- 4 (3) Meso- and metasterna not markedly whiter than the rest of the underside, except at the front angles of the metasternum.
- 5 (8) Rostrum in the basal half confusedly punctured.
- 6 (7) Bristles on the crown semi-erect, very evident in the lateral aspect. Elytra sub-ovate, the interstices flat, the bristles longer and more numerous, the striæ outside the humeral callus deeper than the rest.
timidus, Weise.
- 7 (6) Bristles on the crown adpressed, not distinctly visible in the lateral aspect. Elytra oblong, the interstices convex, the bristles shorter, less erect and less numerous, the striæ outside the humeral callus not deeper than the rest*moguntiacus*, Schultze.
- 8 (5) Rostrum in the basal half punctured in rows.....*hirtulus*, Germ.

C. sulcicollis, Payk. This is the *C. cyanipennis* of British authors, and needs no further comment here.

C. chalybæus, Germ. et auct. plur. This species is easily distinguished by its very white breast, the adpressed bristles on the crown, and the stout legs of which all the femora are absolutely untoothed. In the male the middle of the meso- and metasterna is occupied by a wide depression; in the middle of the last ventral segment there is a circular depression, open in front and behind, but with feeble raised side borders which become more prominent behind; the surface of this depression is conspicuously white owing to its close covering of white scales.

I found one male at Norwich on May 2nd, 1878, but have no note of the plant from which it came; I have one from *Beskidia*, ex Reitter, and have seen others from Holland, ex. coll. Everts.

The name *chalybæus*, Germar, being the symbol for a definition which does not sufficiently define, might well have been relinquished; but it has not. For a long time this name was applied to a species having simple femora and the meso- and metasterna more closely scaled than the remainder of the underside (*cf.*, Weise, Deutsche Ent. Zeitschr., 1883, p. 326). In 1895, however, Weise (*op. cit.*, XXXIX, p. 487) re-named his *chalybæus* of 1883 *pectoralis*, and, by implication, transferred the name *chalybæus* to another species which he had taken near Weimar, and which, according to Schultze (*t. c.* p. 419) differed from the older *chalybæus*, *inter alia*, by the absence of the very white breast. In Ent. Nachr. 1900, pp. 227-232, Prof. H. J. Kolbe has a paper on the blue species of *Ceuthorrhynchus* in which he rejects the shifting of the name *chalybæus*, Germ., to Weise's species from Weimar, and describes the latter under the name of *C. ruebsaameni*. At the request of Dr. Everts, Prof. Kolbe has been so good as to send for my inspection the type of *C. ruebsaameni* and also one of Weise's Weimar specimens. The latter were found on *Abies excelsa*, but the real food-plant of the species is rape, on the leaves of which the larva lives in a flat lens-shaped gall about 5 mm. in diameter. I have not, so far, seen any British specimens of *C. ruebsaameni*, Kolbe; though I have seen examples from Berlin and Istria, ex. coll. Everts. In size and shape it resembles *C. timidus*, from which it may be distinguished by the adpressed bristles on the crown (which latter are directed backward, and not *forward*, as Prof. Kolbe says in his original description), and the continuous and white-scaled middle groove on the pronotum: one sometimes finds specimens of *C. timidus* in which the middle groove of the pronotum is continuous, but these may always be distinguished by the projecting bristles on the crown.

Prof. Kolbe, at pp. 231, 232 of his paper just quoted, says that Thomson's *C. chalybæus*, which he re-names *C. thomsoni*, is in all respects very similar to the real *chalybæus*, but the interstices of the elytra are less convex and narrower, and, particularly near the suture, entirely flat; the interstitial bristles are stronger upon the outer interstices than upon the inner, the hind femora in the male have a fine pointed toothlet, and in the female a stronger pointed toothlet. By the kindness of Prof. Kolbe, who has allowed me to examine his type, I am enabled to give the following particulars of the Scandinavian species, which is not unlikely to occur in the northern part of this country. The insect may be at once distinguished by the white interstitial bristles, which become modified on the outer interstices into

elongate-triangular scales similar in character though not so long as those on the meso- and metasterna. The punctuation of the latter is so sparse that it cannot be said that they are markedly whiter than the rest of the underside. The scape is clavate, and the rostrum confusedly punctured on its basal half; the pubescence on the head is adpressed; the bristles on the pronotum and elytra are much less erect than in *C. timidus*; the elytra have the interstices very uneven, and on the outer side of the apical slope there are a few (8-10) broad triangular tubercles; the outer margin of the elytra in the basal third has about ten rather distant semi-erect white hair-scales, and from thence to the apex is ciliate with sub-contiguous white hair-scales. The type-specimen is a female; it was almost destroyed in the process of pinning, but in other respects is clean and in good condition. *C. thomsoni* does not appear in Cat. Coleopt. Eur., 1906, where *C. ruebsaameni* is put as a synonym of *C. leprieuri*, Bris.; but according to a specimen from Bône, Algeria, lent to me by Dr. Everts, the latter is a non-bristly species!

C. timidus, Weise. This is, in my experience, our commonest species of the group; it has the bristly clothing of the upper surface more strongly developed than in any other species with which I am acquainted. In the male the inner apical angle of the tibiae is produced into a tooth; there is a broad oval depression reaching from the hinder edge of the metasternum to that of the second abdominal segment; in the middle of the last ventral segment there is a circular depression which is bounded behind by a distinct ridge higher at each end than in the middle. The surface of this depression is not more closely scaled than the preceding ventral segment, and is concolorous with the rest of the segment. All the femora are toothed beneath; the tooth on the middle pair is very distinct, that on the front pair very small, and that on the hinder pair intermediate in size. In "Col. Brit. Islands," VI, p. 195, it is said that the description of *C. chalybæus* (*op. cit.*, V, p. 348) must now be applied to *C. timidus*; but the description in question refers to a species in which the elytral striae are almost as broad as the interstices, and does not set forth the distinctive characters of *C. timidus*. I have never seen a specimen of the latter, British or foreign, in which the interstices were not, at least on the disk, nearly twice as broad as the striae.

C. moguntiacus, Schultze. On May 4th, 1912, I knocked from a plant of *Sisymbrium alliaria* (*Alliaria officinalis*) at Colesborne, a *Ceuthorrhynchus*, which at once attracted my attention by reason of a

white middle stripe on the pronotum and its oblong shape. This I determined, by the aid of Everts' "Coleoptera Neerlandica," to be *C. moguntiacus*, Schultze; but as I had only a single example prudence suggested an application to Mr. Champion. With his customary liberality he sent for me to see the material upon which his note on this species (Ent. Mo. Mag., XLIV,* p. 2) was based; this consists of five examples, two from Caterham, two from Guildford, and one ex. coll. D. Sharp, all evidently of one species and the same as my own specimen. The specimen ex. coll. Sharp is labelled, in a handwriting which cannot now be identified, "*viridipennis*, Bris. forte"; and this circumstance led to the appearance of the latter name in our list. Brisout, however, distinctly says that his *viridipennis* is distinguished from *chalybæus* by its adpressed pubescence. The two Caterham examples have been labelled by Dr. K. Daniel "*moguntiacus*, Schultze"; but one of them already had a label placed on it by Schultze himself and bearing the name "*chalybæus*, Germ. Sch.," and therefore, since it is permissible to assume that an author is more likely to know what he means by his own definition than another, further inquiry became necessary. It is clear, however, from a specimen labelled *moguntiacus* by Schultze from the Königl. Zool. Museum, Berlin, lent to me by Prof. Kolbe, as well as specimens from various continental localities lent to me by Dr. Everts, that our insect is the *moguntiacus*, Schultze, of continental authors. The male of this species has the inner apical angle of the tibiæ produced into a tooth; there is a broad depression reaching from the middle of the metasternum to the middle of the second ventral segment; in the middle of the last ventral segment there is a circular depression of which the hinder edge is somewhat raised, the raised portion more evident at each end than in the middle; the last ventral segment, including the concolorous depression, is extremely closely punctured, and the preceding segment is comparatively sparingly punctured. All the femora are toothed; the tooth on the hinder pairs small but evident, on the front pair very minute. The punctures on the basal half of the rostrum are crowded in the male, moderately close in the female.

C. hirtulus, Germ. On June 27th, 1913, I found this species not uncommon on water-cress at Colesborne; I had previously beaten a single example from Corsican pine in October.

Colesborne, Cheltenham:

January 6th, 1914.

* Incorrectly printed Second Series—XVIII [Vol. XLIII] on p. 1 of the volume in question.—Eds.

✓
ANDRENA NANA OF BRITISH AUTHORS DISTINCT FROM
A. NANA OF KIRBY.

BY R. C. L. PERKINS, D.Sc., M.A., F.Z.S.

Some time ago on reading Kirby's description of *Andrena nana*, I thought it very probable that this was not the common species, which both in English works and in many Continental ones is placed under that name. An examination of Kirby's type at once proved that his specimen was entirely different from the *nana* of our collections.

Recently, through the kindness of the Rev. F. D. Morice, I was enabled to examine a considerable Continental series of the *Andrena nana* group, collected by him at divers times in various European countries, as well as some from Northern Africa and Asia. Of some species, which possibly might occur in this country, he kindly allowed me to retain typical specimens.

On a recent visit to the British Museum I again looked at Kirby's type of *nana*, and at once saw that it was a widely spread Continental species, known as *A. schenckella*, Pérez. Kirby's name had already been correctly assigned to this species by Schenck and Schmiedeknecht. *A. schenckella*, therefore, becomes a synonym of *A. nana*, and it is more than probable that the common species, which we have for years been calling *nana*, will require a new name.

It is quite certain that Kirby did not recognise this common species as distinct, as he included specimens of it amongst his *minutula*.

I have not seen any exponent of the true *nana*, K. (*schenckella*, Pér.) from Britain other than Kirby's type, although I have now examined about 1000 examples of this group of *Andrena*. It would appear, therefore, to be very rare or local, and the case is similar to that of *Halictus lævis*, K.

The ♀ of the true *nana* is very distinct from any other of our species from the fact that the impressed apical margins of the 2nd and 3rd abdominal segments bear a number of distinct but shallow scattered punctures. The first segment is polished, and distinctly and plentifully punctured on the disc, while at the sides the punctures become very sparse. The second segment is extremely densely and distinctly punctured, the small amount of surface left between the

punctures being also shining. The mesonotum is evenly punctured, the punctures fairly deep, and the surface shining. The stigma is yellowish-brown, not of the very pallid yellow colour of my *sp. β* (Ent. Mo. Mag., 1913, p. 167), and of *A. spreta*, Pér.

In the ♂, according to a continental example taken by Mr. Morice at Bozen in June, 1907, the abdominal sculpture is very similar to that of the ♀. It bears a close resemblance to the *sp. β* (alluded to above), but the rugosity of the propodeum is less dense, and the anterior area is defined by raised lines, the stigma is much darker, and the face distinctly less wide. The ♀ of *sp. β* on the other hand has no resemblance to the ♀ of Kirby's *nana*, in fact the very great sexual dimorphism of *sp. β* is one of its most striking features.

In conclusion, I may add that the tables in my former paper (Ent. Mo. Mag., XLIX, pp. 166-171) will require slight modification now that the material examined has been so much greater, but it is advisable to await further information from the Continent before adding additional notes. It is clear that we have six quite distinct species of the group in England. I have now seen 1 ♂ and 1 ♀ of a second brood of *A. nana*, Saunders *nec* Kirby, the specimens almost or quite identical with those of the first, so that the possibility of *sp. β* being a second brood of this cannot be entertained.

Park Hill House, Paignton :

December 16th, 1913.

DESCRIPTIONS OF SOME NEW SPECIES OF BRITISH THYSANOPTERA (TUBULIFERA), WITH NOTES ON VARIOUS DESCRIBED FORMS.

BY RICHARD S. BAGNALL, F.L.S.

(Hope Department of Zoology, University Museum, Oxford).

(Concluded from Vol. xlix, page 266).

HOPLANDROTHRIPS ELLISI, *sp. n.**

Length 2.3 to 2.6 mm.

Colour dark grey-brown ; fore-tibiae yellow, shaded with brown basally and along edges ; extreme apices of intermediate and hind tibiae yellowish ; all tarsi yellowish ; basal half of tube darker than distal half. Antennal joints 1, 2, and

* I find pleasure in naming this and the following species in honour of Mr. H. Willoughby Ellis and Mr. J. Collins respectively.

8 concolorous with head; 3 light yellow with apical third touched with grey-brown; 4, 5, and 6 dark grey-brown with basal half, two-fifths and one-third respectively yellow; 7 with extreme base yellowish. Wings clear, except for a very faint smoky tinge about middle; cilia darker.

Head about 1.33 times as long as broad behind eyes, and 1.75 times as long as the prothorax. Cheeks with a few short spines, broadest behind eyes, gently arcuate and as broad before the collar-like thickening at base as across eyes. Eyes finely faceted; post-ocular bristles set well back, longer than eye and very slender. Ocelli fairly large, set on a slight prominence, the posterior pair somewhat close to the inner margins of eyes and on a line drawn through their centre; anterior one directed forwards and protected by a pair of setæ. Mouth-cone reaching about 0.7 way across prosternum.

Antennæ somewhat as in *H. bidens* (Bagn.), about 1.65 times as long as the head; joints 3 and 4 clavate, broader than any of the succeeding. Relative lengths of joints:—14 : 21 : 32 : 31 : 27 : 23 : 20 : 12:—3 sense-cones on 3, 4 on 4, and 2 on both 5 and 6.

Prothorax transverse, twice as broad across hind angles as long; all setæ present, long and blunt, the postero-marginal ones the longest, about 0.7 the median length of the prothorax. Pterothorax as long as broad, broader than width across fore-coxæ; sides of metathorax narrowing to abdomen. Legs somewhat short and stout. Fore-femur strongly incrassate, with a pair of moderately large teeth at apex within; fore-tibia stout and only about 0.6 the length of the femur, apex obliquely produced and inner margin set with a broad-based tooth at about basal third; tarsal tooth long and stout. Fore-coxa with one long blunt hair and several short stout spines. Wings reaching to about 7th abdominal segment, not constricted near middle; cilia long and not very closely spaced, duplicated.

Tube 0.6 the length of head, about 2.2 times as long as broad at base, and about 0.5 as broad at apex as at base; terminal hairs slender, colourless except at base, and a little longer than tube. Bristles on 9th segment not quite as long as tube; tergite with a pair of spine-like setæ near posterior angles, about 0.33 the length of tube. Lateral abdominal bristles on segments 2 to 8 yellowish, with the exception of one pair, blunt or "knobbed," longest on 7 and 8.

♀. A little larger, fore-legs less strongly incrassate and without the femoral and tibial teeth; genal spines more numerous but more minute and therefore less obvious. Post-ocular and prothoracic bristles apparently slightly shorter; pair of spine-like setæ on 9th abdominal tergite absent.

Type: In Hope Collections, University Museum, Oxford.

Hab.: Several ♂♂ and one ♀ (slightly immature) taken by beating dead branches, etc., at Balsall Common, Warwickshire, with *Phlæothrips coriaceus*, September, 1913. I owe a nice series largely to

Mr. Willoughby Ellis's energetic assistance—the species was distinctly rare and difficult to get. One ♀ obtained by beating a dead willow branch near Kirtlington Park (Oxon), 21.ix.13, is apparently referable to this species.

HOPLANDROTHRIPS COLLINSI, sp. n.

Length about 1.5 mm.

Colour almost as in *H. ellisi*; antennal joints 6 to 8 wholly dark brown, 3 yellow, brown distally, 4 with basal third and 5 basally yellow or yellowish brown; basal joints greyish near base.

Head only 1.1 times as long as broad, slightly converging posteriorly, genal spines minute. Mouth-cone almost reaching across prosternum. Antennae 1.7 times as long as head; relative lengths of joints:—12 : 17 : 30 : 27 : 23 : 22 : 18 : 14; 3 and 4 clavate, broader than any of the others; 5 broadly clavate, broader than 6 to 8.

Prothorax and setae about as in *H. ellisi*. Pterothorax a little broader than long; sides of metathorax converging to abdomen. Hind-legs comparatively a little longer than in *H. ellisi*; fore-legs only moderately crassate, with the pair of teeth near apex of femur within smaller than in *H. ellisi*; tibiae longer and more slender, without tooth at basal third within; tarsal tooth somewhat short, sharp. Coxae as in *H. ellisi*. Wings as in *H. ellisi*, 10 cilia duplicated.

Tube 0.6 the length of head; terminal hairs, bristles of 9th segment and lateral abdominal setae as in *H. ellisi*.

Readily separated from *H. ellisi* by its smaller size, shorter and relatively broader head, and the coloration of the antennae.

Type: In Hope Collections, University Museum, Oxford.

Hab.: One ♂ taken with *H. ellisi*, Balsall Common, Warwickshire; and another ♂ by beating dead ash branches, Enslow Bridge (Oxon), September, 1913.

The genus *Hoplandrothrips* is apparently composed of numerous somewhat closely allied forms and is known from Europe, Africa, and North America.

The European species *Phleothrips annulipes*, Reut. (Finland); *minor*, Uzel; *parvus*, Uzel (Bohemia); *brevicollis*, Bagn. (Norway); and *albovittatus*, Schille (Poland), are known from females only, and it is probable that some or all of them should be referred to *Hoplandrothrips*. Of these, *albovittatus* is distinctive on account of the coloration of the prothorax, whilst *annulipes*, *parvus*, *brevicollis*, and *Hoplandrothrips bidens*, Bagn. (Hungary), are separated at once from the species just described by having the intermediate and hind tibiae yellowish both basally and apically. *P. minor* has the head only slightly broader

than long as in *collinsi*, but the coloration of the antennæ is distinctive, the 5th antennal joint is fusiform, and the tube is nearly as long as the head.

Of the American species, *xanthopus*, Hood, *insolens*, Hood, *uzeli*, Hinds, have the tibiæ yellow; *funebri*s, Hood, has the antennæ uniformly brown; *juniperinum*, Hood (somewhat near *collinsi*), has minute prothoracic setæ; and *microps*, Hood, has a peculiarly shaped head with distinctive chætotaxy. *Jennei*, Jones, and *armiger*, Jones, have the innermost pair of bristles on the 9th tergite knobbed, and the antennæ coloured somewhat as in *minor*. *Pergandei*, Hinds, is very near *collinsi*, but has the base of the 6th antennal joint yellow, the pterothorax narrower, and the 5th antennal joint apparently fusiform, whilst *raptor*, Crawford, is not unlike *ellisi*, differing in the shape of the head, the coloration of the antennæ, and in the postero-marginal setæ of the prothorax, which are much shorter than those at posterior angles.

Of the two described African species, *hoodi*, Bagn., is a very distinctive one; *natalensis*, Tryb., is near *collinsi*, differing in its coloration, relative lengths of antennal joints, chætotaxy of abdomen, etc.

CRYPTOTHIRIPS LATUS, Uzel.

One example and larvæ taken by Mr. Wm. Harvey at Bournemouth, January, 1913. Several examples and larvæ amongst dead branches and old bean sticks, Hogley Bog, near Cowley (Oxon), September, 1913, with an undescribed *Haplothrips*. Previously known as British from a single specimen, without data, in the British Museum.

CRYPTOTHIRIPS MAJOR, Bagnall.

Described from a single Norwegian example, Mr. C. B. Williams has had the good fortune of discovering both sexes and larvæ in Surrey and is bringing forward the species.* I have taken larvæ that agree well with those submitted to me by Williams in Oxfordshire and Warwickshire, and possess a single ♂ taken by Mr. J. Collins at Water Eaton (Oxon) in August, 1913.

CEPHALOTHIRIPS MONILICORNIS (Reut.).

Several wingless examples on grass from the Ruskin Reserve, Cothill (Berks), September, 1913.

* Journ. Econ. Biol., December, 1913.

TRICHOTHRIPS SEMICÆCUS, Uzel.

One example from under bark of willow on the banks of the Cherwell, near Oxford, February, 1913.

PHLEOTHRIPS CORIACEUS, Hal.

With an undescribed *Hoplandrothrips*, by beating dead branches, Balsall Common, Warwickshire, September, 1913 (H. Willoughby Ellis and R. S. B.).

HOODIA BAGNALLI, Karny.

Numerous larvæ and one imago on wych elm, Abingdon; larvæ on wych elm and ash, Cothill (Berks), September. Larvæ on ash at Enslow Bridge and Water Eaton (Oxon), October, 1913.

Oldstead, Park Town,

Oxford: December 9th, 1913.

Do House-flies hibernate?—It is commonly believed that the persistence of *Musca domestica* from one season to another is ensured by the survival of a certain number of fertilized females, which pass through the winter usually in a dormant condition in nooks and crannies in houses, and become the mothers of the earliest broods of the following year. In spite, however, of the large amount of attention bestowed upon the house-fly during the last few years, owing to the recognition of its importance as a disease-carrier, definite proof that the insect hibernates in the perfect state is still wanting; indeed, Dr. Henry Skinner, as the result of an observation made by him last March at Philadelphia, U.S.A., has recently answered the question at the head of this note by stating that:—"House-flies pass the winter in the pupal stage and in no other way" (*Entomological News*, Vol. XXIV, No. 7, July, 1913, p. 304). This conclusion, it should be noted, is directly at variance with results obtained in this country by both Newstead and Jepson.

Did we possess exact knowledge of what happens to the house-fly in the interval that elapses between the disappearance of the last belated stragglers in November and December, and the sporadic invasion of our dwellings in the following June by the earliest skirmishers of the season, it is obvious that we might be able to deal more effectually with an ever-recurring menace to the public health. This point has not been overlooked in the investigations upon "Flies as Carriers of Infection," which for several years past have been carried on by the Local Government Board, under the direction of Dr. S. Monckton Copeman, F.R.S., but hitherto the results have been purely negative. Hibernating flies belonging to several species have been found in attics and elsewhere, but upon careful examination it was found that these did not include a single house-fly. In this matter the importance of accurate determination

of species is obvious, and the object of the present note is to enlist during the current winter the sympathetic aid of readers of this journal, in securing and forwarding for identification collections of hibernating flies. Such flies may be looked for in attics and other unoccupied rooms, in chinks and crannies in living rooms, such as the space between a shutter or a loose piece of wall-paper and the wall, and in stables, barns and other out-buildings close to houses. Every consignment of flies so collected, if forwarded (with a label stating place and date of capture) either to Dr. S. Monekton Copeman, F.R.S., Local Government Board, Whitehall, S.W., or to the writer, will be gratefully and promptly acknowledged and investigated. The flies should be placed, just as they are, in a small tin box or wide-mouthed bottle, well protected by soft wrapping, and despatched by parcel post. Such parcels if sent to Dr. Copeman, at the Local Government Board, and marked "O.H.M.S.," need not be stamped.—ERNEST E. AUSTEN, British Museum (Natural History), Cromwell Road, London, S.W.: *January 10th, 1914.*

Pterostichus parumpunctatus, Germ., in the Newcastle district.—This beetle has been very abundant this year in the Newcastle district. My friend Mr. W. E. Sharp, while staying with me in March, took two specimens under bark in Ravensworth Woods, but in April the species turned up in great numbers in the same place; 70 specimens were taken in a very restricted area, and I was able to supply a number of friends and correspondents with series. After this no further search was made for it, but odd examples continued to turn up in different places until the second week in July. The last one taken this year occurred in mid-November, walking on the road only half-a-mile from my house. The species occurs chiefly under logs, but is found also under bark, in rotten wood, under stones in damp places, and one even turned up in the sweeping net. There was little variation of any kind in the specimens observed.—GEO. B. WALSH, B.Sc., 156, Bede Burn Road, Jarrow-on-Tyne: *December, 1913.*

Neoclytus acuminatus, F., in Yorkshire.—On the occasion of the Annual Meeting of the Entomological Section of the Yorkshire Naturalists' Union, I was handed a pill box containing a beetle. Casually glancing at it I rashly named the insect *Clytus arietis*, but some time afterwards when taking the specimen out of the cotton-wool in which it was imbedded, I found it was not that species, but *Neoclytus acuminatus*, F. (*Clytus erythrocephalus*, F.). I at once wrote to its captor asking for further particulars. These he very kindly supplied me with, and I can now add that the insect was taken from an ash tree, imported *via* Liverpool (no doubt from America) in the wood yard of a firm of machine makers in Huddersfield. The species has been twice recorded previously: by Mr. Doubleday in his garden at Epping, and by Mr. Thorpe at Middleton, near Manchester. The former of these is referred to by Stephens (III. Man. IV, 245), who quotes from Curtis, fo. 199: "Mr. Sparshall's cabinet contains a single specimen of this insect, taken alive a few years since in Epping Forest by Mr. Doubleday," and adds, "but the insect being a native of

Georgia, is not likely to be indigenous." Its range is, however, more extended than here given, being, according to Junk's *Coleopterorum Catalogus*, Canada and United States of N. America.—E. G. BAYFORD, 2, Rockingham Street, Bamsley: *January 14th*, 1914.

The ravages of Bupalus piniarius in Prussia. During my recent visit to the forests of the Oberförsterei of Salmünster, Hessen Nassau, I have had the opportunity of seeing the great extent to which the common Geometrid, *Bupalus piniarius*, can multiply, and the damage that the larvæ can cause to the Scots Pine. Unfortunately I was not there early enough in the summer to note whether the imago was then more than usually abundant, but it is now easy to see, even at a distance, where the so-called "Spanner" has been at work, by the very pronounced thinness of the crown. The needles, as could be seen on the snow-thrown and felled trees, were nibbled in the way characteristic of the attacks of this species. Although the pest is to be found in numbers all over the area under pine, the more serious attack was over some fifty acres where the trees were 60-70 years old, with the crowns beginning 65-80 feet up from the ground. A search on December 11th by Mr. W. C. Lowdermilk and myself at the foot of a single tree, selected at random, in this area, resulted in the discovery of 336 pupæ, over an area of some 40 square feet, and, judging from the proportion of the ground examined, we estimated we could have found at least another 200 there. No preference for any particular aspect could be ascertained—indeed such was hardly to be expected in a close stand. The pupæ were, as usual, mostly at the depth where decomposed and undecomposed needles adjoin, and were often completely surrounded by ice particles. A very small percentage—some 6 or 7 of the 336—appeared red, and contained the larvæ of an unknown parasite. Not a single pupa of *Trachea piniperda*—the "Eule"—was found, although it is destructive in some years.—H. G. CHAMPION, New College, Oxford: *January 17th*, 1914.

Reviews.

"DIPTERA DANICA. Part IV. DOLICHOPODIDÆ," by WILLIAM LUNDBECK, 8vo. 407 pp. 130 figs. Copenhagen, G. E. C. Gad. London: William Wesley and Sons.

This volume, forming part of the important work on Danish *Diptera* begun by Mr. Lundbeck in 1907, is similar in general arrangement and style to the previous volumes, and should appeal to British students, for the author gives intelligent and recognisable descriptions in English of all the genera and species known to inhabit Denmark, and of these over 87 per cent. also inhabit Britain. The family of *Dolichopodidæ* have attracted the attention of many able workers in the past, and are consequently fairly well known; it is therefore not surprising that Mr. Lundbeck should find in Denmark only two species (*Dolichopus varitibia* and *Medeterus melancholicus*) which he felt called upon to describe as new to Science, and of these, the first is a synonym of *D. laticola*, Verrall (v. Ent. Mo. Mag., 1913, p. 131). The work yet remaining to be done

in the family, in the way of a more scientific arrangement of the genera, evidently has been apparent to the author, but having had little occasion to study other than the Danish genera, he does not attempt to deal with the subject, but gives us the information that there is the possibility of its receiving attention in the near future at the hands of that experienced Dipterologist, Mr. Th. Becker, of Liegnitz. The 130 figures are mainly of wings and antennæ, the many beautiful characters to be found in the legs and genitalia being very seldom figured. It is interesting to compare the fauna of Denmark and Britain, for in many respects it is remarkably similar; in the present volume there is no Danish genus described that does not also occur in Britain, while we have seven genera (*Orthochile*, *Rhaphium*, *Melanostolus*, *Telmaturgus*, *Lamprochromus*, *Micromorphus* and *Aphrosylus*) and about 88 species not at present found in Denmark. On the other hand, 23 species are described from Denmark that are at present unknown in Britain, but of these it is almost certain that *Teuchophorus signatus*, Zett., is identical with our *T. pectinifer*, Kow., for an examination of a co-type of this latter proves that the supposed differences mentioned by Lundbeck do not exist. The publication of these volumes should give a great impetus to the study of *Diptera* in Denmark, and it is to be hoped that Mr. Lundbeck may long be spared to continue the series.

"FABRE, POET OF SCIENCE," by Dr. C. V. LEGROS, with a preface by J. H. FABRE: translated by BERNARD MIALL. London and Leipsic: T. Fisher Unwin. 8vo, pp. 352. 1913. An English translation of the life of this famous veteran naturalist, as portrayed by his intimate friend, Dr. Legros, was much wanted, and we can commend Mr. Miall's excellent translation to our readers. The subject is divided into sixteen chapters by the French author, and the source of his information is given in the "Notes" on pp. 331--347 of the translation. The letters addressed by Fabre to his brothers during the years spent as schoolmaster at Carpentras and Ajaccio are especially instructive in respect of the almost unknown years of his youth, these giving a fine illustration of his marvellous energy and disinterested labour. The subsequent chapters teem with observations on the habits of the insects, etc., so patiently watched, and so charmingly described, by him. An excellent heliogravure portrait of Fabre is appended.

"THE LIFE OF THE FLY," with which are interspersed some Chapters of Autobiography by J. HENRI FABRE, translated by ALEXANDER TEIXEIRA DE MATTOS, F.Z.S. London, New York, Toronto: Hodder and Stoughton, 8vo, pp. XI and 508. 1913.

The present volume is stated to contain all the essays on Flies, or *Diptera*, from the "Souvenirs Entomologiques," the purely autobiographical essays comprised in the "Souvenirs," and a chapter on the Caddis-worm. The term 'fly,' therefore, is used in a very elastic sense in this book, and the translator's note, on p. 5, that the Cicada, or Cigale, is an insect akin to the grasshopper, seems

to show a lack of entomological knowledge on his part. Like all the works of Fabre, the "Life of the Fly" abounds with interesting accounts of the habits of a variety of insects—the Anthrax, Greenbottles, Grey Flesh-flies, Bumble-bee fly, Bluebottle ("the laying" and "the maggot"), etc., each having a separate chapter devoted to it. The book should be in the hands of all lovers of entomology.

Obituary.

Philip Reese Uhler, LL.D.—This eminent Hemipterist, the first to take up the systematic study of the N. American forms, died at Baltimore on Oct. 21st, 1913, having been born in the same city on June 3rd, 1835. At the early age of ten years, on his father's farm at Reisterstown, he commenced to acquire a fondness for the study of insects, which continued unabated till his death, even during the years of blindness preceding the end. His publishing career began in 1855, terminating in 1904, when failing eyesight (temporarily restored by an operation in 1886) put a stop to his labours in this direction. His first paper was on *Coleoptera* (1855), the next two on *Neuroptera* (1857–58), and the first on *Hemiptera* (1860), to which order he subsequently devoted his entire attention. The admirable concise chapter on these insects, published in "Kingsley's Standard Natural History" (1884–85), shows how firm a grasp he had of the whole subject. During the later years of his life he had in preparation a monograph of the N. American *Capsidæ*, but this was never finished. His collection of American *Hemiptera* was presented to the U. S. National Museum at Washington some years ago, and now forms part of the collection of that Institution. Uhler was elected a member of the Academy of Natural Sciences of Philadelphia in 1858, and of the Entomological Society of Philadelphia in 1859, and he was one of the founders of the Entomological Society of Washington. The above particulars are mainly taken from Prof. L. O. Howard's notice published in the "Entomological News" for December, 1913, in which a portrait of Uhler is also given. The present writer had the pleasure of meeting him more than once during one of his visits to London.—G. C. C.

Jules Desbrochers des Loges, Editor of "Le Frelon" (Chateauroux), died on August 10th, 1913, at Tours, France, in his 70th year. He was the author of many papers on Palearctic and exotic *Curculionidæ*, to which group of *Coleoptera* he was mainly devoted, "Le Frelon" being filled with his writings. He had paid especial attention to the Algerian fauna.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: Thursday, November 13th, 1913.—Mr. A. E. TONGE, F.E.S., President, in the Chair.

Prof. W. Bateson, F.R.S., gave an address on the "Problem of Species which overlap Geographically," illustrating his remarks with numerous lantern slides. Mr. Curwen exhibited specimens of *Parnassius apollo* from Eelépens

and the Laquinthal, mostly very large examples, and including var. *pseudonomion* from Eclépens. Mr. Newman, long and variable series of *Zonosoma annulata* and *Z. pendularia*, with many dark aberrations, and also a series of the hybrid between these two species, showing well the characters of both.

November 27th, 1913. The President in the Chair.

The Annual Exhibition of Varieties, &c.: Mr. West (Greenwich), the Hon. Curator, fifteen cabinet drawers of the Society's reference collection, with which had been incorporated a portion of the Dawson collection. Dr. Chapman, a nearly black *Argynnis aglaia* from Le Lauteret, July, 13th, 1913, and specimens of *Agriades thersites*, *Polyommatus icarus* and var. *icarinus*, with diagrams to show the different alignment of spots. Mr. Edwards, a box of conspicuously coloured *Heterocera* from Burmah. Mr. H. Moore, the rare *Papilio hecateus* from the Solomon Islands. Mr. Schmassinan, a series of varieties of the ♂ of *Ornithoptera hecuba*, and a pair of the gorgeous *O. alexandræ* from New Guinea. The Rev. G. Wheeler, examples of melanic and xanthic aberrations, including *Argynnis niobe* ab. *pelopia*, *Melitæa phœbe* ab., *M. varia* ab., *M. cinxia* ab., and *Melanargia*, sp. ab. of the former and *A. niobe* var. *eris*, *Callimorpha dominula* var. *persona*, etc., of the latter, and referred to many species in which yellow was produced in aberrational forms. Mr. R. Adkin, a series of third brood *Celastrina argiolus*, and discussed the species as to its appearance during the present season. He also showed a long series of *Agriades coridon*, including ab. *syngrapha*, ab. *semisyngrapha*, and many other fine aberrations and series from various localities. Mr. Baumann, a series of *Boarmia repandata* from several localities, including var. *sodorensium* and var. *conversaria*, and specimens of the melanic form of *Acidalia virgularia* which he was placing in the Society's collection. Mr. Bright, a large number of striking aberrations of British *Lepidoptera*, including a long series of undersides of *Agriades thetis* and *A. coridon*, a white aberration of *Argynnis paphia*, *Colias edusa* with wings richly shot with purple; a curious *Saturnia paronia* of female coloration with male antennæ, etc. Mr. Grosvenor, his fine collection of *Ctenonympha tiphon* and its local races. Mr. Curwen, numerous *Lycenidæ* taken by him in Italy and Switzerland, and many aberrations of *Melitæa didyma*. Mr. Newman, a varied series of recently bred *Smerinthus ocellatus*; series of *Amorpha populi* from pale cream colour to almost black, with intermediate and rich pink forms; and a series of hybrid *ocellatus* ♂ and *populi* ♀, two being of the rare ♀ form. Mr. A. Gibbs, a section of his collection of S. American Nymphalids, including many of the brilliant species in the genus *Perisama*. Mr. W. G. Sheldon, his long series of *Melitæa desfontainii*, taken by him at Albarracin this year, and a series of *M. aurinia* var. *iberica* from near Barcelona for comparison. Mr. T. W. Hall, cabinet drawers of *Agriades coridon* and *A. thetis*, showing great aberration with very pronounced blue females and some females curiously splashed with blue. Mr. Main, frames containing series of photographs of the life-histories of *Cicindela campestris* (tiger-beetle), *Chrysopa flava* (lace-wing fly), *Phyllotoma æeris* (jumping saw-fly), etc. Mr. Tonge, a bred series of *Psilura monacha*, including the black form ab. *eremita*; a long series of *Tapinostola*

concolor, etc. Mr. W. J. Kaye, a case of twenty-three pairs of the S. American genera *Melinæa* and *Heliconius*, found flying together and assimilating to each other in colour. Commander Gwatkin-Williams, aberrations of British *Lepidoptera* from Ireland, including *Epinephele jurtina*, ♀ ♀ with banded hind wings, several *Cidaria* which possibly may be *C. conceianata*; *Xanthorhoë montanata* with band obsolete, confluent *Anthrocera trifolii*, *Euchloe cardamines*, ♀ ♀, with ochreous hind wings, etc. Mr. Chas. Oldham, two series of small chalk stones that he had collected within a small radius of the openings of two wasps' nests, and which the wasps had been unable to carry to a greater distance. Mr. A. W. Buckstone, for Mr. Archer, a bleached form of *Angerona prunaria*, ♂, from Oxshott; an almost black *Lithosia helvola* (*deplana*) from Wimbledon; and an *Acidalia* which was supposed to be a very aberrant form of *A. subsericeata*. Mr. H. Worsley-Wood, numerous forms of *Mellinia ocellaris*, including ab. *lineago*, ab. *intermedia*, with *M. gilvago* for comparison; yellow *Brephos parthenias* from Wimbledon, and lead-coloured males of *Agriades thetis* from Corfe. Rev. J. Tarbat, black suffused forms of *Brenthis euphrosyne*, ab. *nigro-sparsata* of *Abraxas grossulariata*, and a *Cidaria truncata* with a broad-banded forewing. Mr. Haynes, a series of hybrid *Selenia tetralunaria*, ♂, and *S. bilunaria*, ♀, with a large preponderance of gynandromorphous specimens: melanic and ochreous varieties of *Ennomos quercinaria*, etc. Mr. H. J. Turner, a series of *Erebia stygne*, to show the extreme local variation in the Alps and Pyrenees. Messrs. Sharp and C. W. Colthrup, many *Colias edusa* from the South-eastern district, representative of the species in 1913. Several interesting discussions took place.—H. J. TURNER, *Hon. Secretary*.

YORKSHIRE NATURALISTS' UNION: ENTOMOLOGICAL SECTION.—The two Annual Meetings of the Entomological Section of the Yorkshire Naturalists' Union were held at the Leeds Institute, on October 25th last, Mr. W. FALCONER, President of the Section, occupying the Chair.

Reports on the work done in the various orders of Insects were read by the Secretaries of the different Committees. That on *Coleoptera* was given by Mr. E. G. Bayford, who stated that, despite the scarcity of beetles generally, due to the long spell of heat and drought, nineteen species had been added to the county list, whilst forty-eight species already in the list had been recorded from one or other of the Ridings for the first time. Mr. Arthur Whitaker read the report on *Lepidoptera*, stating that all the Members who had sent in notes remarked on the great scarcity of moths during the year, attributable, probably, to the wet, cold summer of the previous year. An exception to the general scarcity, however, was the unusual abundance of *Pyrameis atalanta*; whilst *Aplecta occulta* had evidently made one of its periodical invasions of the inland districts of the county. *Orthosia suspecta* had also occurred in its periodical abundance; and *Colias edusa* had occurred in several localities, including Bridlington and Hull. Consequent, probably, on the dry and prolonged summer, *Abraxas grossulariata* had produced second broods of full-fed larvæ in the gardens at Barnsley, Huddersfield, &c.

Mr. W. Denison Roebuck F.L.S., reported for the *Hymenoptera*, *Diptera*, and *Hemiptera* Committee, that the only observations received were on *Hymenoptera*. *Aculeata* were noted at Luddenden and Halifax by Mr. H. Walsh; at Keighley by Mr. Rosse Butterfield; at Leeds by Mr. A. Hodgson and Mr. Roebuck; at Roundhay by Mr. A. E. Bradley; and about Selby by Mr. J. F. Musham. All the observers agreed that the season had not been a favourable one. Of species of more than usual interest, Mr. Walsh at Luddenden noted *Halictus freygessneri*, ♂, fairly plentiful at harebell flowers in one place; *Crabro dimidiatus* and *Bombus jonellus* sparingly. Mr. Butterfield's observations at Keighley included *Bombus soroensis*, in fair numbers, from Keighley to Skipton—a fine record for Airedale—though it has long been known to be not uncommon in Wharfedale; *Nomada ferruginata* in Howden Clough, Keighley, June 15th; the local *N. lathburiana* in fair plenty, entering the burrows of *Andrena cineraria*, interesting as furnishing a new host; *A. helvola* and *A. analis* more plentiful than in any other year of his experience. Mr. Musham gave some interesting field-notes on the commoner species, and Mr. Bradley's notes on humble-bees, at Roundhay, were most interesting. He found one ♂ of *Psithyrus quadricolor* parasitic on *Bombus pratorum*. He notes that while at Roundhay, *B. terrestris* is nearly as common as *B. lucorum*; in the last two years he and his little daughter have only been able to find one specimen of the parasite of the first-named, a female of *Psithyrus vestalis*; the parasite (*P. distinctus*) of *B. lucorum* was extremely common, the males abundant in August and September. Males of *P. campestris*, the parasite of *B. agrorum*, were frequent in the same months, the majority being faded examples, but all the fresh-coated specimens were of the dark variety; they had not taken the female. *B. hortorum* and *B. lapidarius* were found a good many times, but no specimen at all of their parasites—*P. barbutellus* and *P. rupestris*, respectively. Mr. Bradley observes of the season that in April, May, June, and part of July, humble-bees were numerically scarce as compared with the corresponding months of 1912, but in the succeeding months, right into October, it was obvious that they (especially males and young queens) were vastly more common than in the previous season. There is little doubt as to the reason: 1912 was a bad season for them—damp and cold—the colonies did not thrive, although a great number were started. Consequently, comparatively few impregnated queens went into hibernation. This year fewer colonies started than before, but owing to the wonderful summer they have been remarkably prosperous. Mr. Bradley's list of Roundhay humble-bees, arranged in order of frequency, is thus: *Bombus lucorum*, ♀ ♀, ♂; *B. agrorum*, ♀ ♀, ♂; *B. terrestris*, ♀ ♀, ♂; *B. lapidarius*, ♀ ♀, ♂; *B. pratorum*, ♀ ♀, ♂; *B. hortorum*, ♀ ♀ only; *Psithyrus distinctus*, ♀ ♂; *P. campestris*, ♂ only; *P. vestalis*, ♀ only; *P. quadricolor*, ♂ only. In Mr. Roebuck's little garden at Hyde Park Corner, Leeds, the abundant species every year on flowers of *Epilobium angustifolium*, is *Bombus pratorum*, the others occurring—*B. agrorum*, *B. terrestris*, *B. lucorum*—being very scarce, but this is not surprising in a well built up part of the city.

Of other groups than Aculeates, Mr. W. E. L. Wattam sent an example of *Sirex noctilio*, taken in the town of Huddersfield; and Mr. B. Morley, a number

of Ichneumonid and Braconid parasites on *Lepidoptera*. From Skelmanthorpe he had *Pimpla alternans*, Grav., ♀, from *Boarmia repandata*; *Stenickneumon trilineatus*, Gmel., ♂, from *Abraxas grossulariata*; a new species of *Ophion* which Mr. Claude Morley will describe in the next volume of his "Ichneumonologia Britannica," from *Agrotis agathina* and *Taniocampa populeti*; *Macrocentrus infirmus*, Nees, from *Dasypolia templi*; *Apanteles satebrosus*, Marsh., from *Pieris brassicæ*; and *Blaptocampus nigricornis*, Wesm., ♂, from *Cabera pusaria*. From Normanton he had bred four *Hemiteles similis*, Gmel. (one ♀), hyper-parasitic through a species of *Apanteles* from *Emmelesia alchemittata*; *Apanteles spurius*, Wesm., from *Hadena pisi*; and *Lissonota sulphurifera*, Grav., ♀, from *Dianthæcia carpophaga*. From Penistone Moors, *Barytropa insidiator*, Först., ♂, from *Acronycta menyanthidis*. From Doncaster, *Microgaster connexus*, Nees, from *Porthesia auriflua*. From Canterbury, East Kent, *Meteorus caligatus*, Hal., ♂, from *Eupithecia absynthiata*. From West Cornwall, *Probolus alticola*, Grav., ♂, from *Toxocampa craccæ*. From Aberdeen, *Pimpla instigator*, Fah., ♂, from *Acronycta euphorbiæ*. Mr. G. T. Porritt read the report on *Neuroptera* and *Orthoptera*; and Mr. W. Falconer that on *Arachnida*.

The exhibits of *Coloptera* were numerous and of much interest. Mr. Cribb, a box of *Hydradeephaga* from the Bradford district. Amongst them were numerous confirmations of the older records, including *Bidessus geminus* previously recorded only from Hebden Bridge in 1831. *Hydroporus discretus*, *Agabus congener*, *Helochaures punctatus*, *Homalota tibialis*, *H. islandica*, *Mycetoporus clavicornis*, *Anisotoma ovalis*, *Longitarsus ochroleucus*, and *L. membranaceus*, all from North Yorkshire, by Mr. M. L. Thompson. *Coccinella hieroglyphica*, *Monochamus sutor*, *Phyllotreta 4-maculata*, *Ophonus brevicollis*, and other local captures by Dr. Jordan of Bubwith. *Dyschirius æneus* and *Heteroceris britannicus* by E. G. Bayford, who also exhibited, on behalf of Mr. E. C. Horrell, of Scarborough, a number of rare species taken in that district, e.g.—*Notiophilus hypocrita*, *Hydræna longior*, *Bledius terebrans*, *Micralymma brevipenne*, *Longitarsus senecionis*, and *Tomicus laticis*. The same gentleman had also sent a number of interesting melanic forms and colour varieties, with several specimens showing asymmetry. Amongst these were an almost black *Nebria livida* and the varieties *rubens* and *lateralis* of *Podabrus alpinus*.

Those of *Lepidoptera* were numerous, the most noteworthy being an extraordinary, and probably unique, variety, of *Anhocetis rufina*, of an almost uniform dark chocolate colour, by Dr. Smart, who took it among specimens of the ordinary forms in South Wales. Mr. G. T. Porritt showed the best of the varieties of *Abraxas grossulariata* he had bred during the year, including four exceptionally fine dark *nigrosarsata* from wild larvæ from Huddersfield. Mr. Fred. Kaye showed the variety *varleyata* from the same district, and Mr. A. Whitaker had bred the same form from Barnsley. Mr. Fletcher showed four specimens of *Aplecta oculata* taken at sugar in Haw Park, Wakefield; black *Fidonia atomaria* from the moors, near Huddersfield, were shown by various members, as were other similar, but now well known, variations in other species. Dr. Croft exhibited a collection of Alpine, &c., butterflies, taken by himself this year. The *Hymenoptera* included the various parasites bred by Mr. B. Morley,

alluded to in the report on that order, and *Thyreopus cribrarius* by Mr. Bayford. Of *Orthoptera*, Mr. Porritt showed *Decticus verrucivorus*, *Forficula lesnei*, and *Apterygida albipennis*, taken by himself in East Kent in September; and Mr. Bayford, an example of *Periplaneta australasiae* from Barnsley. *Trichoptera* were represented by a case of specimens taken in the Skipton district by Mr. Cribben.

At the Evening Meeting, after the election of Officers for the ensuing year, two papers were read on "Asymmetry in Coleoptera, with especial reference to the specific value of *Notiophilus 4-punctatus*," by Mr. E. G. Bayford; and "Harvest Mites," by Mr. W. Falconer, on both of which discussion ensued.—G. T. PORRITT.

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*, &c. (32).

BY THE REV. F. D. MORICE M.A., F.E.S.

TENTHREDOPSIS, COSTA (continued from (30) Vol. XLVIII, p. 236).

Dr. Enslin, to whom I already owe so much in connexion with these papers, has just laid me under a new and quite unexpected obligation. I have long been waiting anxiously for the appearance (in *Deutsche Ent. Zeitschr.*) of his Revision of Palearctic *Tenthredopsis* spp.; and now, in answer to an enquiry when it might be expected to be published, he has sent me the original ms. of his tabulation, which is in the press, but not yet issued.* Consequently I feel that I have no longer any excuse for delaying my own attempt to elucidate the British spp.: and am now preparing Tables for the determination of their ♀ ♀, soon, I hope, to be followed by similar Tables for the ♂ ♂. These Tables, however, to judge from their appearance in ms., will be somewhat lengthy, and also, as it seems to me, will require a certain amount of preliminary explanation to render them practically useful. And as papers of more than a certain length can naturally not be inserted whole in a single number, or even in two numbers, of this Magazine, I fear that some little time must elapse before the completed paper can be in the hands of my readers.

Almost without exception, so far as concerns the British fauna, such characters of structure—including sculpture, puncturation, &c.—as have yet been utilized for the determination of *Tenthredopsis* spp. are in one way or another exceedingly unsatisfactory. Most of them, to an eye not specially trained to appreciate such characters, are quite inappreciable; and often they are only visible at all, when examined

* Since this was printed Dr. Enslin's work has appeared.—F. D. M.

EXCHANGE.

Offered.—Dragonflies, British East Africa, in papers, unnamed but full data. Butterflies, Somaliland and East Africa, in papers, named and full data.

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from a particular point of view and with great care to avoid illusions. Besides this, they almost all turn upon questions of degree—a little more or a little less, &c.—and are absolutely incapable of being defined in language which shall cover all cases. No possible Tables founded on them can ever make the determination of the species easy even for an expert, much less for a beginner: and practically it is by characters of *coloration* only that most actual determinations are made. These latter characters are generally recognised with little difficulty; but it is certain that some of them are liable to variation, and to what lengths such variation may go within the limits of any particular species, it is as yet quite impossible to say; we know only that among the few forms exhibiting well-marked peculiarities of structure there seems to be almost unlimited variability as to colour, but, if we refuse in other cases to accept colour-characters as “specific,” it will be impossible to distinguish “species” among them at all! Perhaps it is needless to point out that no division of forms into species, varieties, and so forth, which rests *entirely* on the observation of likenesses and unlikenesses, whether of structure or colour, among cabinet-specimens (picked up here there and everywhere by collectors in various districts) can be more than *provisional*, in the absence of any evidence as to the occurrence of pairing between particular ♂♂ and ♀♀, or as to the descent of particular groups of specimens from a common stock, or as to the attachment of different forms to different food-plants, &c. And unfortunately in the case of *Tenthredopsis* forms, such external evidences as to their consanguinity are at present hardly ever to be obtained. Of most of our reputed species no form is known except the *imago*; no one is known to have reared even a single brood of them; pairings between what we assume to be their sexes have never been recorded; in short we are absolutely ignorant of any fact of their actual life-history which might suggest affinities with other forms, and only believe them to be “species,” because specimens of them agree in a certain number of “characters,” which we believe in this particular case to be constant, though we have no positive proof that they are so!

The remedy for these evils is obvious. If we are ever to arrive at anything approaching *finality* in classifying and naming *Tenthredopsis* forms, we must find their larvæ, food-plants, &c., and learn how to rear them through successive generations, noting and recording all indications that any of their characters are or are not constant: we

must ascertain positively what ♂ ♂ and ♀ ♀ pair together normally, and whether their offspring reproduce exactly the characters of their parents, &c. But all this, even if it is likely to be attempted, will take long years of skilled labour; and in the meantime we should do well not to feel too confident that our reputed species, varieties, &c., are correctly distinguished and defined.

It is possible, however, that even in cabinet specimens characters may yet be found, which will bring us a little nearer towards finality than we are at present. Cameron held that clear characters correlated with true specific difference might be found in the "saws" of all *Tenthredopsis* ♀ ♀, and from my experience of such characters in other genera, I should have expected this to be so. But personally I have not succeeded in detecting such characters in the present genus; and Cameron, who believed that he *had* detected them, contrived to separate by means of them in his Vol. I, several forms, which afterwards (in Vol. IV) he considered to be identical! My impression is that such differences probably *exist*; but that we have still to learn what they are, and how we are to look for them. Mere outline-sketches of the jagged under-edge of the saw, I feel certain, will not teach us much.

For the present, however, we can only deal with this genus by making such use as we can of the differences already ascertained to characterize certain forms, and so dividing them into groups, some of which, probably, may coincide with real species, while others may ultimately rank higher yet (sub-genera) and others probably are at most local races, &c. There seems no reason why we should not *provisionally* accept some of these groups as *species*, and make use of the orthodox methods ("Priority," &c.) to furnish them with names. But I fear that a great deal of the labour that is now-a-days expended on this subject will in the end prove to have been wasted; or, at least, survive only in the shape of additional "synonyms."

If, setting aside all questions of species, varieties, &c., we think of British *Tenthredopsis* merely as so many "*forms*" agreeing and disagreeing in points which are capable of more or less precise definition, I think we shall come to certain results which may be stated as follows:—

(a) On a certain character—almost the only quite positive and unmistakeable character of structure which occurs among them—we

can divide all the ♀ ♀ into two distinct groups, viz.: A—forms with *large and strongly excised* hypopygium; and B—forms with the hypopygium *entire and normal*. Group A, according to present ideas, is to be treated as one single “species,” viz.: *litterata*, Geoffr., but it includes forms of every possible variety in coloration; in fact, their colour-differences are much greater and more obvious than most of those which, in group B, are treated as specific. (b) Then in group B we find one form (*excisa*) separated from the rest by a characteristic incision in the apical margin of its elypeus. But for distinguishing *inter se* the forms, other than *excisa*, in this group, we can get but little assistance from comparing them as to points of structure, and are practically forced to rely chiefly upon colour-characters. Let us now see what these characters are.

I find it convenient for practical purposes to think of them as divisible into two kinds, viz.: (1) Differences in the *ground-colour*; and (2) Differences in what has been called *pictura albida* (*vel flava*).

(1) I think of the “ground-colour” in a *Teuthredopsis* as primarily and originally pale yellowish or brownish, sometimes with a slightly warmer reddish tinge (*aurantiacus*), but never definitely red. This ground-colour is displaced by black (or at least dark brown), in some cases to a very slight extent, in others largely, and in some almost entirely; and especially in the last case we find the blackening displaced in its turn, but only in certain places, viz.: on segments of the abdomen which lie beyond (*i.e.*, posterior to) the “median segment” or “propodeum”—by more or less extensive *definitely red* “maculæ” on each side of the upper surface or dorsum, which maculæ are in some species actually confluent over the dorsum, leaving only the basal and apical segments entirely black.

Accordingly, apart from *pictura albida*, we can arrange these forms, according to their coloration, into a continuous series, with practically quite yellow forms (*e.g.*, typical *nassata* ♀) at one end of the scale, and black forms with completely red-banded abdomens (*e.g.*, normal *coqueberti* ♀) at the other. Between these extremes we find all sorts of intermediate conditions (*e.g.*, forms darker and smaller than typical *nassata*, but much resembling certain continental named varieties of that species; and black-bodied forms with hardly noticeable red abdominal markings such as *spretu*, *thoruleyi*, and the form called by British authors *tristis*). But I do not think that we have yet

any positive proof that even the most dissimilar among these forms may not be mere varieties of one and the same species: for, after all, certain forms, which we are practically sure are only varieties of *litterata*, differ quite as much from one another in coloration—and differ in the same directions—as *nassata* ♀ differs from *thornleyi* ♀ or *coqueberti* ♀. Neither, however, have we any positive proof of the contrary: for it is perfectly conceivable that, in one species of a genus, coloration may vary indefinitely, and in another be normally, or even invariably, constant. We may suspect, but we cannot be *sure*, that the coloration of any particular form is (or is not) constant, till we have watched it through successive generations, or found that it is, or is not, correlated with a habit of pairing only, or at least normally, with some particular form of the opposite sex. In this case no such observations are yet on record.

(2) Now as to the “*pictura albida vel flava*.” This is a very beautiful and conspicuous ornamentation of certain particular divisions only of the integument, with brilliant white or yellow (quite distinct from the duller yellows of the ground-colour), which appears in every British *Tenthredopsis* form without exception, but is much more developed (i.e., more extensive) in some forms than in others. At the very least it occupies the *mouth parts* (*labrum*, etc.) with more or less (usually the whole) of the *clypeus* and the *scutellum* (perhaps also the *cenchri*—at any rate, for whatever reason, these are white or whitish in all our species!). In its extreme developments it extends very much further, i.e., to some or all of the following parts:—*almost the whole head* (genæ, tempora, and orbits of eyes; the apices of the supra-antennal tubercles occasionally), also the *edges of the pronotum* with the *tegulæ*; the posterior corner (rarely) of the “middle lobes” of the mesonotum; a triangular appendage at the apex of the scutellum, the postscutellum and certain sclerites following it; the pleuræ, sterna, coxæ, and trochanters, and finally the apical margin of the propodeum. Further than this point, in the posterior direction, it never goes; so that we may say, “*pictura albida* in a *Tenthredopsis* ends exactly where *rufescence* begins!”

(To be continued).

AN EXCURSION TO SOUTHERN TUNISIA, WITH NOTES ON
SOME OF THE *COLEOPTERA*, &c., MET WITH.

BY G. C. CHAMPION, F.Z.S.

We often read about entomological expeditions to Algeria, but very little has been published about Tunisia, so far as I am aware. A brief account of an excursion last spring to the southern limits of that country may therefore be interesting to the readers of this magazine. On April 26th last I joined my friends, the Rev. F. D. Morice, A. v. Schultess, and Theodor Steck, at Tunis, and after staying there a few days to visit Carthage, the coast at Marsa, &c., we proceeded by train to Kairouan. Here we met a well-known Swiss entomologist, Dr. Santsehi, long resident in the town, who kindly guided us to various places in the district. On May 3rd we continued our journey by train to Sbeitla, remaining there till May 7th. From Sbeitla the train was then taken to Tozeur, the terminus of the line, about $9\frac{1}{2}$ hours journey, the last section of which, from Metlaoui onwards (about 35 miles), having not long been opened. From Tozeur we drove along the sand dunes bordering the great Djerid Chott and the large palm-oases, about 16 miles, to Nefta, another Arab town, not far from the Algerian frontier, and considerably to the south of Biskra. Staying here one night, May 12th, to look round the neighbourhood, we returned the next day to Tozeur. On May 14th we proceeded northward to Metlaoui, travelling thence by the eastern line to Gafsa. Here we remained till May 17th, and on the 19th left by the night train for Sfax. After spending about three days at this coast town, the train was again taken for Tunis, viâ Sousse, the journey being broken for a few hours at El Djem. Tunis was reached on May 20th, where we remained till May 23rd, one day being devoted to the hills about Hammam Lif, and another to Carthage, &c.

The country seen on these long railway journeys was on the whole uninteresting till the fine gorge of the Seldja, about 7 miles from Metlaoui, was reached, this defile being not unlike that of El Kantara, well known to travellers proceeding to Biskra. A great deal of cultivation (vines, olives, &c.) was observed in the neighbourhood of Tunis, Sousse, Sfax, Kairouan, &c.; but the main business of the southern regions was the transportation of phosphates, extensive quarries of which are worked at Metlaoui, &c. At Sbeitla large quantities of esparto grass (halfa) are brought in on the backs of camels to the railway for exportation. Now and then mountain peaks or ranges

were visible from the train, but we did not approach very near the higher ground. From Metlaoui the line descends over uninhabited dry stony regions, clothed with scattered spiny plants, the whole way to the Arab villages adjacent to the palm-oases. Our collecting ground was mainly confined to the following places :—

(1) TUNIS.—Carthage and the coast at Marsa, both easily and expeditiously reached by electric railway, one line going across the shallow lagoon to La Goulette and the other along its shore ; Hammam Lif and the scrub-covered dry hill slopes above that place ; the beautiful park and gardens of Belvedere and the adjacent Jardin d'Essai just outside the town.

(2) KAIROUAN.—The plain and gardens outside the walls, and the hill of Djebel Baten, 13 kilometres distant.

(3) SBEITLA.—An exposed district at a considerable elevation (about 1700 feet), with an abundant water supply (which is carried 100 miles to Sfax), and a good deal of stony ground about the famous temple and ruins of Sufetula, adjacent to which the arid places are everywhere covered with scattered spiny plants.

(4) SFAX.—The gardens inland along the Gabès road and the coast north of the town, the portion to the south being wholly devoted to the preparation of salt for export.

(5) GAFSA.—An old town and military station near the great Oued Baïech, with a palm-oasis and desert adjacent. The old roman Capsa.

(6) TOZEUR.—An excellent centre for excursions into the extensive, beautiful oases, the great Chott, &c., and with good accommodation at the Bellevue Hotel.

(7) NEFTA.—A similar Arab town to the westward. The great heat here, as at Tozeur, even in May, was somewhat trying.

(8) EL DJEM.—An Arab village with fine Roman ruins (Thysdrus), the ground about the place being mostly under cultivation and, in consequence, unproductive.

The characteristic *Coleoptera* of the regions are, of course, the large *Tenebrionidæ* (*Adesmia*, *Pimelia*, *Blaps*, *Ocnere*, *Akis*, *Scaurus*, *Tentyria*, *Pachychila*, *Erodius*, *Zophosis*, *Sepidium*, and, in the north, *Asida*), various *Cicindelidæ* and *Carabidæ* (amongst the latter the fine *Anthiæ* and *Graphipteri* are well worth the journey to see actually at home), *Buprestidæ* (*Julodis*, *Aurigena*, *Acmæodera*), *Lamellicornia*, (*Scara-*

bæus, *Onitis*, *Oniticellus*, *Gymnopleurus*, *Glaphyrus*, *Amphicoma*, *Cetonia*, *Hoplia*, *Hybosorus*, &c.), *Meloidæ* (*Mylabris*, (*Enas*, *Lydus*), *Ædemeridæ* (*Probosca*, *Chitona*, *Ædemera*), *Cistelidæ* (*Omophilus*), *Clythridæ*; *Chrysomelidæ* (*Timarcha*), *Malachiidæ*, *Dasytidæ*, *Dermestidæ* (*Attagenus*, *Anthrenus*), &c. Amongst the *Hemiptera-Heteroptera* many *Pentatomidæ*, *Coreidæ*, *Lygæidæ*, *Reduviidæ*, and *Capsidæ* were captured, such genera as *Emblethis* occurring on sandy ground everywhere. Of *Lepidoptera* very few came in our way, except some small *Geometridæ*, *Crambidæ*, and *Pyralidæ* at light, at Tozeur and Gafsa, and probably not a dozen species of *Rhopalocera* were seen during the whole time, and those mostly common "Britishers," the only one particularly attracting our attention, at Sbeitla, being *Euchloe charltonia*. The *Hymenoptera* and *Orthoptera*, numerous enough in places, the particular quest of one or the other of my companions, must be left for them to report upon. *Odonata* were seen in numbers along the irrigation channels in the palm-oases, some of them belonging to the genus *Orthetrum*, and one pallid form occasionally on the desert, an *Onychogomphus*. Amongst the large number of *Coleoptera* and *Hemiptera* taken, certainly not less than 300 species in all, the following are a few of the more interesting forms, so far as at present mounted and identified, taking the localities in the order given above:

TUNIS.—On the sandy sea-coast of Marsa, the usual littoral beetles, such as *Eurynebria complanata*, L., *Pimelia grossa*, F., one or more species of *Tentyria*, *Erodium*, *Scarites*, *Phaleria* and *Brachycerus*, *Adimonia barbara*, Er. (?), in profusion (many of the specimens being 'cripples'), *Masoreus*, &c. About the ruins of Carthage, numerous small Mediterranean forms, divers *Scaurus*, *Asida* and *Pimelia*, *Rhagonycha barbara*, F. (in profusion, nearly all females), &c., but nothing of particular interest was noted. In the Belvedere Park and Jardin d'Essai an *Akis* was common along the roads and paths; and on the flowers and by sweeping, an *Amphicoma*, *Mycterus pulverulentus*, Küst., *Ædemera basalis*, Küst., and *Æ. barbara*, F., &c. At Hammam Lif, an enormous red and black *Mylabris* was seen about the vineyards (looking very conspicuous when on the wing in the hot sun), and on the dry bush-clad slopes above these places we met with various interesting *Clythrids*, *Cryptocephali*, *Anthaxia*, *Acmæodera*, and *Coræbus*, *Probosca viridana*, Schmidt, &c. In places near the railway station *Labidostomis taxicornis*, F., was to be seen in profusion on low plants.

(To be continued).

NOTES ON A COLLECTION OF *ODONATA* FROM VAN,
TURKEY IN ASIA.

BY KENNETH J. MORTON, F.E.S.

PLATE VIII.

By the courtesy of Professor J. J. Manissadjian, Merzifun, I received a small collection of *Odonata* and *Myrmeleonidæ* taken by him at Van during June and July, 1912. Unfortunately I have no details regarding the nature of the precise localities in which the various species were found, but as I am not aware that any papers exist relating to the *Odonata* of that particular region, the collection seems worthy of a short notice. The *Odonata* alone are here dealt with.

The vilayet of Van lies in the extreme east of Turkey-in-Asia and its eastern boundary is Persia, while on the north it is separated by a narrow part of Erzerum from the Russian Transcaucasian province of Erivan. The winter is long and severe. The city of Van which, as is well known, is of great archæological and historical interest, lies at an altitude of about 5,200 feet, $1\frac{1}{2}$ miles from the east shore of Lake Van. The water of this lake is too salt to drink, but there is good water along the coast from springs and streams. A canal 19 miles long irrigates the gardens of an extensive suburb lying to the east of the city.

The European character of the *Odonata* is very striking, the only species out of the ordinary run being *Sympetrum decoloratum* and a somewhat doubtful species of *Æschna*. It is very likely that Professor Manissadjian gave more attention to other orders; at the same time the district is almost certainly poor in dragon-flies, comparing in this respect unfavourably with the Transcaucasian provinces of Russia, many of the interesting species reported by Bartenef from there being absent in the present collection. The extreme variability found in a long series of *Agrion ornatum* is of more than ordinary interest and forms the principal object of the publication of these notes.

AGRIONIDÆ—LESTINÆ.

Lestes dryas, Kirby.—Many examples of both sexes, mostly in teneral condition (teneral ♀ ♀, 12.VII).

AGRIONINÆ.

Ischnura pumilio, Charp.—A good series of both sexes (♀ ♀ of both forms, 18.VI).

Enallagma cyathigerum, Charp.—3 ♂ ♂ all of which agree in having the footstalk of the marking on second abdominal segment

interrupted, the anterior part of the marking being thus separated from the transverse base. The marking is rather small and has its anterior margin regularly rounded.

Agrion ornatum, Selys. A long series of both sexes. The variation of the males as regards the markings on the second and third abdominal segments will be best understood by a reference to the diagrams on Plate VIII. Fig. 3 may be considered as approximating to the type and of course intermediates exist. A small Swiss series received from Dr. Ris is fairly constant in the typical character of the markings, and as far as he is aware nothing approaching the extreme variability shown by the Van examples exists in Switzerland. At Van the species is drawing near to the extreme south-eastern limit of its known distribution (Mesopotamia).

Agrion lunulatum, Charp.—A pair. The form of the middle lobe of the posterior margin of the prothorax makes easy the determination of this species.

Agrion puella, Linné.—One ♂ of quite typical aspect but of rather small size (h. w. 18 mm).

ÆSCHNIDÆ—CORDULEGASTERINÆ.

Cordulegaster insignis, Schneider.—2 ♂♂, 2 ♀♀ (one ♀ dated 5.VII). These seem to belong to the same species as that found at Amasia, although they are more strikingly marked with yellow, very pale on the thorax and 2nd and 3rd abdominal segments. The general scheme of colour of the abdomen is very well represented in a figure of a ♀ given in a paper by Bartenef on *Odonata* from the Caucasus—Signakh and Telav district (Arb. Lab. Zool. Kab. Univ. Warsaw, 1912), although in the unnamed Caucasian insect the proportion of black is greater than in the examples from Van. As in *Cordulegaster annulatus*, all the palæarctic species of the genus have probably the same tendency to run into fairly well defined local races. *C. insignis* has occurred at Comana in Roumania.

ÆSCHNINÆ.

Æschna serrata, Hagen. A single teneral ♀ not in very good condition, and the name *serrata* is accordingly applied with a slight hesitation. The specimen is of large size (h. w., exp. 50 mm.) and is remarkable for the great development of the yellow lateral bands of the thorax, the anterior band being prolonged caudad under the wing base, and confluent with the rather large wedge-shaped marking on the upper part of the middle field. This insect seems to come near *Æschna osiliensis*, recently fully described and figured by Mierzejewski (Bull.

de l'Acad. Sciences de Cracovie, March, 1913) from the Island of Oesel (Livonia), which the author considers may be a European representative species of *Æ. serrata*, Hagen. He gives a comparative table of the differences between his species and *Æ. serrata*, but I am not sure whether he has had actual specimens of the latter before him or relied on Martin's diagnosis (Coll. Zool. de Selys, *Æschnines*, p. 37). The Oesel species and that from Van seem to be different from *H. crenata*, Hagen, of which I possess 2 ♂♂ and 1 ♀ from Siberia (received from Bartenef as *Æ. gigas*), a pair of which have been determined by Professor E. M. Walker, Toronto, who has examined Hagen's type of *Æ. crenata*. I have not seen *Æ. osiliensis* and *Æ. serrata* (the latter recorded from the Khirgis country and elsewhere in Asia). It is well to say that the hamuli of *Æ. crenata* agree very closely with the fig. of *osiliensis*, and the principal difference between *crenata* and the other two seems to be in the form and size of the upper and inferior appendages. The three, if distinct species, belong to a group of closely allied forms.

LIBELLULINÆ.

Orthetrum brunneum, Fonscolombe.—5 ♂♂, 1 ♀, all mature, one ♂ dated 18.VI; also a few teneralis. The specimens call for no special remark. The species ranges eastwards to Kashmir and Gobi.

Libellula depressa, Linné.—3 ♂♂, 1 ♀ (a very mature ♂, 18.VI). If anything rather smaller than Western European examples (h. w. 34–35 mm.). The species has been recorded from as far east as Astrabad.

Sympetrum striolatum, Charp.—2 ♂♂, 2 ♀♀. Call for no special remarks.

Sympetrum flaveolum, Linné.—1 ♂, 4 ♀♀, all teneral. Under the average in size, one female measuring only 25 mm., h. w. The condition of the single ♂ hardly admits of a satisfactory statement on the point, but the yellow basal marking of the wings seems to be more restricted than usual.

Sympetrum decoloratum, Selys.—3 ♂♂, 2 ♀♀. Although all in rather teneral condition, there is no doubt about their appertaining to this interesting form, which seems to take the place of *S. vulgatum* in certain parts of the Mediterranean region. It ranges from Tripoli to Quetta. Ris (Collections Zoologiques de Selys, *Libellulinae*, p. 631) refers to this species at some length, and mentions two somewhat immature examples of *Sympetrum* from Catalonia, which may probably

belong to *S. decoloratum*. This peculiar pale, sand-coloured insect would be an interesting addition to the fauna of Europe. *S. vulgatum* is not known from the Iberian peninsula save as represented by these two doubtful examples, and it is much to be desired that this problem may be solved by some one of our entomologists who now so frequently visit Spain.

13, Blackford Road, Edinburgh :

January, 1914.

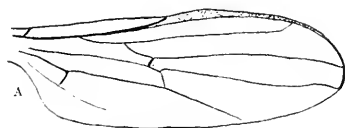
A REMARKABLE CASE OF VENATIONAL TERATOLOGY IN DIPTERA.

BY F. W. EDWARDS, B.A., F.E.S.

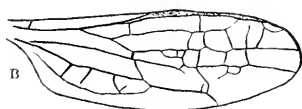
(Published by permission of the Trustees of the British Museum).

The accompanying figures represent the normal venation (A) and the left (B) and right (C) wings of an abnormal individual of *Tachydromia articulata*, Mcq.* Flies with one or two accessory veinlets are, of course, of common occurrence, but nothing approaching the specimen figured has, so far as I am aware, been put on record. It is noteworthy that in both wings of the abnormal individual the anal vein curves forwards and ends in the cubitus in a manner unknown in *Empidæ*, but curiously suggestive of *Lonchopteridæ*.

The abnormal specimen occurred among a series taken by Lt.-Col. Yerbury, at Porthcawl, Glamorgan, in June, 1906. The specimens had been determined by the late Mr. G. H. Verrall.



T. articulata, normal.



T. articulata, left wing



T. articulata, right wing.

February, 1914.

* *T. articulata*, Mcq., in the Verrall Collection is probably *annulipes*, Meig.—J. E. C.

Do House-flies hibernate?—In my note to "The Times" (Sept. 10th, 1901), suggested by extremely isolated cases of infectious illness in lonely country cottages, I drew attention to the possible quite promiscuous spreading of disease by insects. Yet, since then, no definite proof of this merely *mechanical* conveyance of disease by insects, apart from their share in propagating infection, through acting as hosts to other organisms, during certain phases of development, has been forthcoming.

We never know from what source light may come, and it is well for every medical entomologist to inspect the fauna and flora of his patient's rooms. He will conclude that, if the case is so strong against the house-fly, there is hardly an insect Order that does not contribute a species to be, *more or less*, indicted with it: *Mallophaga* (*Docophorus*, if birds are kept), *Copeognatha* (*Troctes*), *Orthoptera* (*Forficula*, *Blatta*, *Gryllus*), *Anoplura* (*Phthirus* and *Pediculus*), *Thysanoptera* and *Homoptera* (*Thrips* and *Aphis*, if there are plants), *Heteroptera* (*Cimex*), *Coleoptera* (*Dermestes*, *Ptinus*, *Anobium*, *Xestobium*), *Lepidoptera* (*Pyrallis*, *Aglossa*, *Acompsia*, *Endrosis*, *Tineola*, *Tinea*), *Diptera* (*Pollenia*, *Calliphora*, *Culex*), *Aphaniptera* (*Pulex*). Many of these insects have considerable powers of locomotion, are hard to kill and have haunts of a kind to evade many means of disinfection, while their habits are not, always, innocuous. Nor must we forget other classes, *e.g.*, *Arachnida*.

Out-of-doors, such *Diptera* as *Simulium*, *Ceratopogon*, *Anopheles*, the *Tabanidæ* and *Hippoboscidæ* are under suspicion, and it seems surprising that such diseases as Anthrax are not spread even more disastrously than is the case. But, if *circumstantial* evidence is strong against them and the house-fly, with certain obvious exceptions there is little *direct* evidence. Bacteriological cultivations of, *e.g.*, tuberculosis bacilli from the feet, or proboscis, of any fly, caught at random, has, as far as I know, not been effected. There is no obviously increased incidence of possibly fly-borne disease at the season when the insects are prevalent. An indiscriminate crusade is to be deprecated, or many beneficent parasitic Tachinidæ might come to grief.

As regards the hibernation of the house-fly my evidence is negative. If its size is small its numbers are large. Considering how freely hibernating specimens of *Vespa*, *Vanessa urticæ*, and *Scoliopteryx libatrix* are found in houses, it is strange that, if this fly habitually hibernates, it should not be more freely met with in this state. A few examples need not prove the rule. I had my attention drawn to a hibernating colony of *Eristalis tenax*, in an attic, some time ago. Of course the house-fly's hibernation may occur in vegetable refuse, &c., *in the open*. Anyhow, the fresh air and sunlight of its partly outdoor life must largely disinfect this member of Nature's great Sanitary Board! I have never corroborated Walker's assertion (Ins. Brit. Dipt., vol. II, p. 110) concerning the allied *Pollenia rudis*, F.

These questions, as well as the suggestive parallelism of the growth, caused in the cambium layer of a plant, by the mechanical, or chemical, irritation of a gall-maker, hymenopterous, dipterous, or other, to certain new growths in the Animal Kingdom, unite Entomology with Medicine in a deep interest.—F. H. HAINES, Brookside, Winfrith, Dorchester, Dorset: *Feb. 7th, 1914.*

A few Coleoptera, &c., from Bengal.—One of my sons, who has frequently caught small *Coleoptera*, &c., on the wing in Surrey, has just sent me a sample of what can be obtained in this way at Sarda, Bengal, in December. The locality is on the Ganges, 150 miles from Calcutta, and about half the insects taken, upwards of 100 species in all, were captured flying towards sunset. The genera with few exceptions are familiar European types, and it is interesting to note how many are common to such widely separated regions. The number of species in each genus is as follows:—*Dyschirius* (4), *Tachys* (9 or 10), *Metabletus* (1), *Harpalus*? (1), *Acupalpus* (2), *Chlœnius* (1), *Amblystomus*? (2), *Cusnonia* (1), *Philhydrus* (1), *Berosus* (1), *Linnebius* (1), *Cercyon* (2), *Sphæridium* (1), *Heterocerus* (3), *Georyssus* (2), *Limnichus* (2 or 3), *Aleochara* (2), *Atheta* (1), *Philonthus* (3), *Actobius* (1), *Cryptobium* (1), *Pæderus* (3), *Sunius* (1), *Medon* (2 or 3), *Lithocharis* (1), *Stenus* (1), *Bledius* (3), *Planeustomus* (2), *Trogophleus* (2), *Oxytelus* (4), *Pselaphus* (1), *Sacium* (1), *Hydnobius* (1), *Olibrus* (4), *Carpophilus* (1), *Ephistemus* (1), *Cryptophilus* (1), *Psammæcus* (1), *Cathartus* or *Silvanus* (2), *Melanophthalma* (2), *Monotoma* (1), *Onthophagus* (2), *Aphodius* (8), *Rhyssenus* (2), *Luciola* (1), *Lamprorhiza*? (1) *Rhizopertha* (1), *Gonocephalum* (1), *Cnemeplatia* (1), *Ennebeus* (1), *Anthicus* (3), *Notoxus* (1), *Macratris* (1), *Xylophilus* (1), *Myllocer* (1), *Cleonus* (1), *Nanophyes* (1), *Bagous* (2), *Apion* (1), *Xyleborus* (1), *Pachnephorus*? (2), *Diapromorpha* (1), *Oides* (1), *Aulacophora* (1), *Monolepta* (2), *Luperus*? (2), *Languria* (1), *Coccinella* (1), *Exochomus*? (1), &c. The Hemiptera include, amongst others, *Microvelia* (1), and *Geocoris* (1). Four species of *Coleoptera*—*Lithocharis ochracea*, Grav., *Aphodius lividus*, F., *Rhizopertha pusilla*, F., and *Anthicus floralis*, F.—are cosmopolitan. *Aulacophora abdominalis*, *Oides flava*, *Diapromorpha melanopus*, *Luciola respertina*, and *Myllocer blandus*, Faust, are known Indian insects. The Tenebrionid genus *Ennebeus*, Wat., has a remarkable distribution—Tasmania, Mexico, Panama, Colombia, the Sarda insect being closely related to *E. uniformis*, Ch., from Panama. Of the Staphylinid genus *Planeustomus*, one Indian species only is known, and that from Burma. The *Cnemeplatia* is probably *C. indica*, Fairm.—G. C. CHAMPION, Horsell, Woking: *February, 1914.*

A note on the pairing of Ateomes paradoxus.—On May 5th, 1913, I placed two freshly caught specimens of the myrmecophilous beetle *Ateomes paradoxus*, Grav., into a small plaster cell, in which had been put some days previously a queen and a few workers of the host ant *Formica fusca* var. *fusco-rufibarbis*, For. My object was to observe, and if possible to photograph the beetle in the act of stroking and fondling the queen with its antennæ. In the spring of 1912 an *Ateomes* kept under similar conditions repeatedly behaved in the manner

indicated, but in the present experiment I did not succeed in my quest. It happened, however, that the pair of *Atemeles* now under consideration proved to be male and female, and in a very short time they were *in copulâ*. Mr. Donisthorpe's description of this function in *Lomechusa* (Trans. Ent. Soc. Lond., 1908, p. 416) very well applies to the method of *Atemeles*. Similarly to *Lomechusa* the male does not grasp the female with his tarsi, but the latter without restraint remains practically stationary. Then the male, taking up a position almost in line behind her, his head by the side of her upturned anal segments, curls his body high up and forwards until the apices of their abdomens meet and coition is effected. Occasionally the female would direct her antennæ back over her body and stroke the up-curved abdomen of the male with an undulatory movement similar to that observed in the case of the queen ant referred to above. It seems worthy of note that the procedure appears to be quite by mutual consent, and that, except there be a synchronous desire for union between the sexes, consummation is not possible. I noted the pair *in copulâ* on the following further occasions, viz.:—May 6th, 9 a.m., 3 p.m., 6 p.m., about 15 minutes each; 8.15 p.m., one minute; 10 p.m., two minutes. May 7th, 15 minutes and perhaps much longer as I had to leave them. May 8th, 9th, 10th, I did not observe them *in cop.* at all. May 11th, about 45 minutes. Soon after this, leaving them by accident exposed to too strong sunshine, the pair were killed. Business demands on my time allowed but a cursory attention to these insects, so that the record is most probably a very imperfect one. Nevertheless it appears clearly manifest that "mate-hunger" is keen in the species, and that there is no partiality towards either sex in its development. Lest by any chance I may not have made myself perfectly clear, I would add that I do not in any way suggest that the females of other species of beetles are without sexual desire, or that they need force to induce it.—JAMES H. KEYS, 7, Whimble Street, Plymouth: January 14th, 1914.

A note on deformed antennæ in certain beetles.—In August, 1911, a visit was made to that naturalists' paradise, Spurn Point, and among many other species, *Scrymlya halensis* was taken, but of 24 specimens, six exhibited a curious malformation of the antennæ, in each case only on one side. A number of joints, varying from two to four, while retaining their usual size, had become fused, keeping, however, their usual shape on one side, usually the internal side, but being flattened on the other. Consequently when the antennæ moved, these fused joints worked as one, while the remainder remained flexible as usual. A second visit was made in September of the following year to attempt to find more examples of the same malformation, but, though the species was common, no specimens were found. In September, 1913, owing to the drought, very few beetles were to be seen, but one example turned up out of six.

During these two years I had specially looked for further cases amongst other beetles, and examples were found in *Miscodera arctica* and *Creophilus maxillosus*, one in each case. The former occurs not uncommonly at the foot of a huge slag-heap at Grangetown on the Tees Estuary, in company with another mountain species, *Pterostichus vitreus* (there is an interesting problem in distribution here.) The malformed *Creophilus* was taken in rotten fish sweepings from the

trawlers in Hull, which had been thrown on a piece of waste ground. In each case the antennæ were shaped like those of the *Sernyla*. Despite careful search, no other examples have so far been met with in other species taken by me. It doubtless occurs, but it is interesting to note that all the beetles exhibiting it so far have been forms which have had a habitat either saline or brackish (the *Miscodera* occurs within two hundred yards of the salt water.) Whether this is in any way responsible, my data are as yet insufficient to show.—
 GEO. B. WALSH, 166, Bede Burn Road, Jarrow-on-Tyne: February, 1914.

Some interesting captures of Coleoptera during 1913.—The following captures are perhaps worthy of note:—*Acrulia inflata* occurred under bark on several occasions in Chopwell Woods, Co. Durham, and *Triplax ænea* was abundant in Ravensworth Woods under bark of holly and dead poplar, and in fungus on holly at Cotherston in Teesdale. Cotherston also yielded *Antherophagus pallens* (1) and *Dascillus cervinus* (common), while on the slopes of Mickie Fell there occurred one specimen of *Hydroporus ferrugineus* and many *Colathus melanocephalus*, var. *nubigena*. All the Teesdale captures were made in June. In July a visit to Middlesbrough yielded ten specimens of *Bledius gulielmi*, Sharp (*defensus*, Fauv.), in the locality where it was first taken by my friend, Mr. W. E. Sharp. In August, a visit to the Tees-side slag-heaps—a well-known collecting ground to Middlesbrough naturalists—gave enormous numbers of *Haliphus striatus** in a brackish pool where it occurred in company with *Agabus conspersus* and *Ochthebius marinus* (*Philydrus maritimus* used to occur here also, but a lengthy search failed to reveal it). Night-searching at the foot of the sandhills at Saltburn yielded a fair number of *Nebria livida* and one *Silpha atrata*, var. *brunneat*†; probably the local record for *Silpha subrotundata* should be referred to this variety, and not to the “Celtic” species. In September a very interesting week-end was spent with my friend Dr. Fordham at Babwith in search of *Dytiscus circumcinctus*. The dry weather had caused most of the pools in the neighbourhood and on Skipwith Common to dry up, and those that remained contained, as it were, a concentrated essence of water beetles. *Agabus bipustulatus* and *Colymbetes fuscus* were present in myriads, and were a perfect nuisance; a dwarf form of the latter was taken, however, which was only 13 mm. long. Amongst swarms of *Hydropori*, the most interesting species were *H. umbrosus*, *H. tristis*, and *H. nigrita*. In addition a dozen specimens of *Philydrus minutus* occurred, this being generally a very rare Yorkshire insect. The desired *Dytiscus*, too, turned up in some numbers, about twenty specimens falling to the pair of us, while it was several times present in the net with the two common species, *D. marginalis* and *D. punctulatus*. Sweeping on Skipwith Common yielded *Coccinella hieroglyphica* in abundance, both type form and the black variety, together with one specimen of *Lina populi*. On carrion there occurred *Necrobia violaceat* and *rufipes*,* and *Dermestes murinus*, the two *Necrobie* again occurring later on a dead porpoise at Spurn Point and on rotten fish sweepings on the Fish Dock in Hull. A visit to Spurn on September 6th proved almost fruitless. The dry season had killed off most of the vegetation on

* New County records.

† New Riding records.

the spit, and high tides had covered with sand what was left of the saltwort that the drought had spared. However, a careful search on this and especially under dry drift yielded a few *Helops pallidus*, a species which my friend, Mr. T. Stainforth of Hull and I had turned up in great numbers the previous year. There was no need to dig for it as Fowler advises; nearly all the specimens were obtained by giving a blow to the saltwort, when the beetles fell out and either lay still or languidly crawled away. The season closed for me with a visit for the week-end in early November to my friend, Mr. J. Gardner, at Hart. Here *Hydnobii* and *Anisotomæ* were the objective, but unfavourable weather spoiled collecting, the only interesting species that occurred being *A. rugosa*.—GEO. B. WALSH, *February, 1914.*

* *Sirex juveneus*, L., and *Monochamus sartor*, L., in Yorkshire.—At the Annual Meeting of the South-West Yorkshire Entomological Society, held at the house of the Secretary, Mr. J. Hooper, Middlestown, near Wakefield, on January 17th, that gentleman exhibited two female examples of the true *Sirex juveneus*, L., which had been brought to him from the local colliery. They had been in his possession for some years. The right of this species to a place on the visitors' list now no longer rests on the single example, also a Yorkshire one, referred to *ante*, vol. xliv, p. 101. At the same time and place the same gentleman also exhibited a fine female *Monochamus sartor*, L., which had been brought to him alive by a neighbour last August. It was dug from an old stump in the garden and thus appears to have bred there. Mr. Hooper very generously gave me the specimen. The only other Yorkshire example of which I have any knowledge was a fine male which was in the collection of Mr. A. Paterson of Doncaster and had been taken by him from timber at the Plant works. This specimen, which was undoubtedly an importation, is now lost.—E. G. BAYFORD, 2, Rockingham Street, Barnsley: *February 9th, 1914.*

Notes on Lepidoptera in Surrey in 1913.—Owing to our being unable to spend much time in our usual collecting grounds, we have but little of interest to record as the result of last year's work; however, the following captures, etc., may be worth mentioning. A search among fallen aborted spruce cones in a locality not far from Tilford resulted in the discovery of two larvæ of *Cateremna terebrella* among a considerable number of empty pupa skins; on May 29th we were fortunate enough to breed a ♀ of this species, and a ♂ about a month later. Mr. Thurnall has already recorded *C. terebrella* from the county (*Ent. Mo. Mag.*, vol. xlii, p. 180) and suggested that we should look for further specimens. At Woking, *Laspeyresia cosmophorana* was not scarce in May, flying round young pines at dusk, together with a very few examples of *Pammene ochsenheimeriana*. *Eucosma micana* was also taken at Woking on June 21st, with *Crambus dumetellus*. At Frimley, at the beginning of August, *Eucosma ericetana* and *E. antiquana* flying amongst *Stachys palustris* were taken. Finally, we have bred a fair number of *Alucita lienigianus* from larvæ found on *Artemisia vulgaris* at Woking.—H. G. AND R. J. CHAMPION, Oxford: *February 3rd, 1914.*

On the breeding of the variety nigrosparsata of Abraxas grossulariata.—My experience in breeding var. *nigrosparsata* of *Abraxas grossulariata* last summer was so remarkable, that it is advisable to place it on record to compare with others and future experiments of the same character.

It will be remembered that in 1912, I bred from wild larvæ from a garden here some very extreme forms of v. *nigrosparsata* (see Ent. Mo. Mag, September, 1912, pp. 214 and 215), including two of var. *nigra*, which is in reality the most extreme form of *nigrosparsata*. Both of the var. *nigra* were males, and one of them I paired with a very fine ♀ *nigrosparsata*, the larvæ resulting from which I labelled as "Brood I." Next I paired a very fine green-black ♂ *nigrosparsata* with an almost equally fine ♀, the larvæ from which were labelled "Brood II." Lastly I got a pairing from two very fine specimens of the form, but which were not so good as the others, and the larvæ from this lot I called "Brood III." Unfortunately the larvæ from all three broods mostly died off in the following spring, and out of them I bred only about sixty moths, in pretty equal numbers from each brood. The moths from broods I and II were all ordinary typical specimens, whilst those from brood III, from which I had certainly expected least, were all *nigrosparsata* varying from white ground with but little black freckling, to an exceedingly dark example, which was markedly finer than either of its parents. One typical specimen did indeed emerge in the cage of this brood, but it obviously belonged to one of the other broods, the larva having doubtless got in accidentally when food changing. In almost every brood of this species, there is some characteristic in the moths, slight though it may often be, by which one may separate them at once. Pairings were again obtained from the moths from all the three broods, and it will be interesting to ascertain whether there will be any return in broods I and II to the *nigra* or *nigrosparsata* forms; but as I bred five second brood moths from them in the autumn, again all most ordinary specimens, I have no great faith that anything better will be produced from the hibernating larvæ during the coming summer. It seems clear that the form does not work out at all on Mendelian lines, which is curious when we know that the vars. *varleyata* and *lacticolor* of the same species, do so work out.—GEO. T. PORRITT, Elm Lea, Dalton, Huddersfield: February 3rd, 1914.

Notes on the breeding of two species of Diptera.—So little is known of the habits of many of our commonest *Diptera* that I venture to place on record the breeding of the undermentioned two species.

Anthomyia procellaris, Rond.—In either May or June, 1912, I noticed that the young pears on a tree in my orchard were much infected by Dipterous larvæ. I therefore gathered two or three of the affected pears, in order to ascertain, if possible, what insect caused the damage, and placed them in a breeding jar. The pears eventually became mouldy, and most of the larvæ perished, but I succeeded in breeding, at about the beginning of July, two or three specimens of the above *Anthomyid*.

Anthracophaga frontosa, Meig.—Early in May, 1912, I observed in a marshy spot near my house, that the growth of a small species of *Carex*, which I was

unable to identify with certainty, had been affected by some insect. I accordingly investigated matters, and found that the damage had evidently been caused by larvæ of some kind, of which I found the pupæ encased between the leaves of the plants. I took some half-dozen of these pupæ, and from them bred specimens of this Chloropid.—C. G. NURSE (Lt.-Colonel), Timworth Hall, Bury St. Edmunds: *February 4th*, 1914.

Notes on two uncommon species of British Diptera. Psilosoma lefebvrei, Zetterstedt.—While collecting at Tuddenham, Suffolk, on August 30th, 1911, I took several specimens of this species, and about the same time I obtained two or three more at Ampton, Suffolk. These were determined for me by Mr. Collin, who informed me that the insect was hardly known from this country, except from Scotland, and he suggested that I should keep a look out for it the following year. Accordingly on August 28th, 1912, I visited the Ampton locality where I had taken the specimens, and which is only about a mile from my house. Here I was pleased to find the insects in some numbers. They were sitting about on the leaves of various trees and bushes on the borders of a lake, though I could not observe that they showed any preference for any particular tree, as I swept them from lime, birch, beech, and sallow. Between August 25th and September 3rd, 1912, I visited the locality two or three times, and obtained three or four dozen of both sexes.

Rhacochlæna toxoneura, Loew.—On May 12th, 1912, I obtained at Ampton, Suffolk, a single specimen of a Trypetid, which I determined with a good deal of doubt as this species. However, Mr. Collin was able to confirm the determination, and as he informed me that the species was considered very rare in Britain, I made a note of the date and locality in the hope of obtaining more specimens. About the middle of May, 1913, I tried for two or three days the ground where I believed I had taken the first example, but without result, and I began to think that I was unlikely to come across the species again. On May 18th there was such a strong wind that I hesitated whether I should go out with a net, but finally decided to try some low ground between Timworth and Ampton parishes, about a quarter of a mile from my own house. The locality in question is fairly sheltered, and has been planted with young willows of the variety which is grown for the manufacture of cricket bats. Many of these trees had attained the height of 25 or 30 feet, and a girth of some two feet. Here I came across *Rhacochlæna* in considerable numbers. I found them sitting, flicking their wings, on the sheltered sides of the willow trunks, from about two feet to seven or more feet from the ground. I secured a long series, in fact I might have captured dozens. On subsequent days, up to June 9th, I found the insect on the tree trunks in the same locality, but never in such numbers as on the first extremely windy day. It seems to me quite possible that it may usually frequent the higher branches of willows, and only in very windy weather seek shelter below. This might account for its rarity in collections. Nothing is known of its life history, but it may breed in willow leaves or twigs, and I merely throw out the suggestion for what it is worth.—C. G. NURSE (Lt.-Col.): *February 4th*, 1914.

Obituary.

Ernest Olivier, a grandson of the celebrated entomologist, Antoine Guillaume Olivier, died at Moulins, France, on January 26th, aged 70 years. He was present at the Congresses at Brussels and Oxford, and read a paper at the latter entitled "Nécessité de l'Emploi du Latin pour les Descriptions." For many years he had paid especial attention to the *Lampyridæ*, and was thus well known to Coleopterists all over the world. He was elected a Member of the Société Entomologique de France and of the Entomological Society of London in the same year, 1873. For many years he had edited the "Revue Scientifique du Bourbonnais."

Reviews.

"THE NORTH AMERICAN DRAGON-FLIES OF THE GENUS *ÆSHNA*." By E. M. WALKER, B.A., M.B., Lecturer in Zoology in the University of Toronto. University of Toronto Studies, Biological series, No. 11, 1912: pp. viii, 213, with 28 plates.

Whether one happens to open this fine memoir at the table of contents at the beginning or at the beautiful series of plates at the end, one is at once struck by the evidence of a strong and unusually exhaustive handling of the subject. It is interesting to note the origin of the work. The view that some of the nominal species of North American *Æshna* (as the author prefers to call it) represented a complex, seems to have been reached independently by Williamson and Walker from observations in the field. Not very long ago the names of *Æ. clepsydra*, *verticalis*, and *constricta* made up the tale of the genus in a good many State lists, but all that has been changed, and the preliminary key published by Dr. Walker in the Canadian Entomologist, XL, pp. 377—91, 450-1, 1908 (itself a first rate working document) foreshadowed an enormous increase in the knowledge of the genus, no fewer than eight new species being there described. In the monograph under review, three of these species are reduced to the rank of sub-species, the total number of species and sub-species being twenty, excluding those separated by Williamson under the generic name of *Coryphæschna*.

As has been indicated, the subject is dealt with from very many points of view. No matter which fauna or which aspect (excepting internal matters) the student of *Æschinæ* may be dealing with, a reference to Dr. Walker's work will be indispensable. It is, therefore, unnecessary to go into details. One may notice, however, the reduction of the nomenclature of the colour pattern to definite shape, and also the very important figures of the accessory genitalia of the ♂ not before used for purposes of classification in the genus. Variation is dealt with under different aspects—climatic, geographical, and colour—the existence of two types of colour in the females being discussed, one in which the pale markings are mostly blue as in the males (homœochromatic), and the other in which these markings are yellow or yellowish-green (heterochromatic). These two conditions may be observed in British *Æ. juncea*. The

details of life history are also very full, no less than the nymphs of twelve species being described.

It is worthy of remark that although the number of North American species is rather greater than that of the Palaearctic species, the latter present a larger number of groups, and are more diversified in structure, and colour pattern. All the North American groups are represented in the palaearctic region, excepting those of *californica* and *multicolor*, with the addition of several others, *grandis* (with *viridis*), *mixta* (with *affinis*), *isosceles* (probably with others), and *melanictera* (a Japanese species). Incidentally we congratulate ourselves that at least in this one genus, we on this side of the Atlantic can hold our own in a comparison with the very beautiful North American Odonate fauna.

Two of our six British species (not one as stated in Ent., 1913, p. 272) occur in North America, *Æ. juncea* in almost identical form, although decidedly smaller in northern specimens, and *Æ. cœrulea*, for which the race name *septentrionalis* is retained apparently more as a matter of convenience than on account of any material difference.—K. J. M.

"INSECT LIFE: ITS WHY AND WHEREFORE." By the Rev. HUBERT G. STANLEY, F.E.S. London: Sir Isaac Pitman & Sons, Ltd., 1, Amen Corner, E.C. 1913.

In this work, which is intended "to be placed in the hands of farmers, gardeners, and others interested," some fifteen forms of insect life (with "the slug" thrown in) are treated of in a pleasantly written but highly generalized and somewhat sketchy manner, and illustrated with rather crude text figures. All these forms come more or less into contact with man as personal or agricultural pests, or in one or two cases as benefactors; and to those who wish to acquire a rudimentary knowledge of the subject, this well-printed little book may be of some service.

"COMMON BRITISH MOTHS. By A. M. STEWART ("Peeps at Nature" Series). With 16 plates, 8 coloured. London: Adam and Charles Black. 1913.

In our last year's volume (p. 66) we had the pleasure of noticing Mr. A. M. Stewart's excellent little work on "British Butterflies" in the "Peeps at Nature" Series, issued by Messrs. A. and C. Black, and the companion volume on our "Common Moths" by the same author fully maintains the high standard of excellence of its predecessor. The eight coloured plates (one on the cover) represent, on an uniform scale of three-quarters real size, some 200 of the better-known species of moths indigenous to our Islands, and to these plates no higher praise can be given than to state that in every respect they are fully equal to those of the author's earlier work. It is true that the limitations of the "three-colour" process become rather evident in the case of the smaller Geometers and the few *Tortrices* and *Tineæ* shewn, but even these reduced figures retain a great deal of the character of the actual moths from which

they were directly photographed. The seven half-tone plates of larvæ, &c. are also very good, but are obviously taken from preserved specimens. Concisely written but very useful hints on larva-finding and rearing, and field work generally, are followed by brief notes on every species figured, and the entire work may be described as a marvel of cheapness in the true sense.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
Thursday, December 12th, 1913.—Mr. A. E. TONGE, F.E.S., President, in the Chair.

Mr. Tatchell, of Bournemouth, was elected a Member.

Mr. W. J. Kaye read a paper, "The *Ithomiinæ*," and illustrated it with a fine selection of examples of the different groups of the subfamily. Mr. Hall reported a case of the occurrence of the "furniture mite," and asked how the pest could be effectively dealt with. Mr. Step, a box of *Diptera*, chiefly *Syrphidæ*, taken at flowers of Michaelmas daisy in October and December. Mr. R. Adkin, a series of *Nemeophila plantaginis* bred from ova laid by a Grasmere female in July, 1912. One larva fed up and pupated in September, and the imago came out on October 27th. The rest hibernated several together in the debris of the cage and emerged in due course the following June. He also showed four *Mellinia ocellaris* presented to the Society by Mr. H. Worsley-Wood. Mr. Curwen, a series of *Erebia ceto* near the form ab. *obscura* from the Simplan Pass. Mr. Carr, a collection of *Lepidoptera* from Staffordshire and North Wales, including very strongly marked forms of *Acidalia marginepunctata* and some nice banded examples of *Melanippe tristata*. Mr. Adkin read a Report of the Annual Conference of Delegates of Societies affiliated to the British Association.

Thursday, January 8th, 1914.—Mr. W. J. KAYE, F.E.S., Vice-President, in the Chair.

Messrs. D. A. Gotch, of Northampton, A. Leeds, of Knebworth, W. H. Jackson, of Wimbledon, and T. H. Archer, of Southfields, were elected Members.

Mr. Hugh Main gave an interesting account of his holiday in Switzerland in 1913, entitled "The Brunig Road," and illustrated his address with a large number of lantern slides, made mainly from his own photographs. Mr. Step, a photograph by Mr. West (Ashstead) of the "furniture mite" *Glyceiphagus cursor*.

ANNUAL MEETING—Thursday, January 22nd, 1914. Mr. A. E. TONGE, F.E.S., President, in the Chair.

The Balance Sheet and Report of the Council were received and adopted, and the Officers and Council for the coming year were declared elected (see *anteà*, p. 24).

The President read his annual Address, and after giving an account of the present status of the Society, dealt at considerable length with some phases of his special study of the ova of *Lepidoptera*, particularly wild-laid ova.

The usual votes of thanks were accorded, and the new President, Mr. B. H. Smith, took the Chair.

Mr. Newman exhibited a small specimen of *Leucania pallens* taken at sugar at Newark, with three well developed antennæ, of which one was much thicker than usual, and towards the tip was bifid. - HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, December 3rd, 1913.*—
Mr. G. T. BETHUNE-BAKER, F.L.S., F.Z.S., President, in the Chair.

Mr. Walter Ormiston, of Kalupahani, Haldumille, Ceylon, was elected a Fellow of the Society.

Dr. G. B. Longstaff presented to the Society, on behalf of a number of subscribers, a copy of Hübner's "Exotische Schmetterlinge," original edition. Mr. G. T. Porritt, exhibited two curious specimens of *Abraxas grossulariata*. In the first the fore-wings were asymmetrical in marking, and the left lower wing was wanting. In the other the right lower wing was also wanting, but in its case there was a rudiment of it visible. Miss Diana R. Wilson (who was present as a visitor) butterflies caught in Brazil this year, during the last week of January and the first week of February. Prof. Poulton, eight examples of *Episcaphula interrupta*, Jac., found in one clay cell, and eleven examples found in another, by Mr. C. O. Farquharson, B.Sc., at Moor Plantation, near Ibadan, S. Nigeria. He also read notes received from Mr. Lamborn on the Driver Ants (*Dorylus*) of Southern Nigeria, and exhibited the material referred to. Dr. K. Jordan, a series of species of the two groups of Papilios called by Haase *Cosmodesmus* and *Pharmacophagus* respectively. Mr. Champion, a specimen of *Thorictus pauciseta*, Wasm., attached to the scape of the left antenna of a worker of an ant, *Myrmecocystus viaticus*, F. Mr. W. C. Crawley (1) three deilated ♀ ♀ of *L. niger*, L., taken in Isle of Wight, July, 1911. These, after rearing ♀ ♀s, fought until only one survived; (2) a ♀ of *Aphænogaster subterranea*, Latr., taken August, 1912, at Yvorne, with Prof. Forel, after marriage-flight, brought up two ♀ ♀ by September, 1913; (3) six ♀ ♀ of *L. flavus*, Fabr., taken after marriage-flight at Seaton, July 14th, 1912. They built a cell together and brought up ♀ ♀ by June 23rd, 1913. Mr. O. E. Janson, specimens of *Laglaisia caloptera*, Bigot, one of the curious forms of *Diptera* with stalked eyes, from Dutch New Guinea. Capt. E. B. Purefoy, two more specimens of *Gonepteryx cleopatra*, with gynandromorphous colouring. Mr. E. B. Ashby, a number of Nearctic butterflies. Mr. W. J. Kaye, a very large series of specimens of *Heliconius anderida* ranging into a number of forms which tended to become fairly definite subspecies in different geographical regions. Dr. H. Eltringham gave a preliminary account of the scent-apparatus in *Amauris egialea*, comparing same with that of *A. niavius*, illustrated by drawings, and microphotographs of sections of the brush. The following paper was read: "New Species of South

American Butterflies," by W. F. H. Rosenberg, F.E.S., and G. Talbot, F.E.S. Mr. Talbot made the following exhibits in connection with this paper:— (1) Sixteen new species of S. American butterflies; (2) a black and brown mimetic combination from Yahuar Mayo, S.E. Peru, October and November, nine species.

ANNUAL MEETING.—*Wednesday, January 21st, 1914.* The President in the Chair.

No other names having been received in addition to those proposed by the Council as Officers and Council for the ensuing year, the latter were declared by the President to be elected.

Mr. R. W. Lloyd, one of the Auditors, read the Auditors' Report, which was adopted on the motion of Mr. H. E. Page, seconded by Mr. J. Platt Barrett.

The Rev. G. Wheeler, one of the Secretaries, then read the Report of the Council, which was adopted on the motion of Mr. R. S. Standen, seconded by Mr. R. W. Lloyd.

The President then delivered an address, after which Prof. Poulton moved a vote of thanks to him, coupled with the request that he would allow the address to be printed as a part of the Society's proceedings; this was seconded by Mr. W. J. Lucas and carried by acclamation.

The President returned thanks, and Mr. O. E. Janson then proposed a vote of thanks to the other Officers for their services during the past year; this was seconded by Mr. T. F. P. Hoar and carried, the Treasurer and the two Secretaries returning thanks in a few words.

SYNOPSIS OF THE BRITISH FORMS OF THE *ANDRENA MINUTULA* GROUP.

BY R. C. L. PERKINS, D.Sc., M.A., F.E.S.

The following tables distinguish, as satisfactorily as I am able, the various species and forms of these difficult and variable bees, which have been much neglected by systematic workers in this country:—

♂ ♂.

- 1 (4) 1st and 2nd abdominal segments shining between the punctures, not rendered dull from distinct fine surface sculpture between them; the 2nd and 3rd segments very densely and distinctly punctured, so that the spaces between the punctures are much reduced, and in some examples of *nana*, Kirby, hardly any surface remains.
- 2 (3) Apical impressions of the 2nd and 3rd segments with a minute dense granular-like sculpture under a strong lens, rendering their surface dull, and with some conspicuous shallow punctures on this part; mesonotal puncturation closer and stronger; abdomen beneath dull

or nearly so, with conspicuous snow-white apical fringes on the 2nd, 3rd, and 4th ventral segments. (Apical impressions of 2nd and 3rd segments very deep).....*nana*, Kirby (= *schenkella*, Pérez.).

- 3 (2) Apical impressions of the 2nd and 3rd segments with at most very fine rugulosity, sometimes hardly visible, so that, at least in some aspects, the surface is shining or polished and the scattered punctures on this part are extremely fine and minute, or may be absent; mesonotal punctures remote or irregular; abdomen beneath distinctly shining, with long fine hairs forming apical fringes, but not fasciate with snow-white conspicuous ones ...*alphenella*, sp. n.
(Stigma very pale).
- 4 (1) 1st and 2nd abdominal not both shining, but the first at least (excepting its extreme apex sometimes) is dull with surface sculpture; puncturation of abdomen, when present, generally shallow and feebly impressed.
- 5 (6) Apical impressions of the 2nd and 3rd segments very densely sculptured, appearing densely minutely punctate or granulate, and extremely dull; the basal segment also with the same dense apical sculpture; this sculpture appears even more dense than that of the general surface of the segments; 4th abdominal segment with a rather dense apical white hair-band, entire, or at least not much interrupted in the middle. (Stigma very pale; clypeus with white hairs)*spretta*, Pérez. (= *niveata*, E. Saund.
nec Friese).
- 6 (5) Apical impressions of the 2nd and 3rd segments both much smoother than the general surface, usually distinctly shining in some aspects, never with sculpture like *spretta*, but at most finely rugulose; 4th segment with at most a very thin fringe of hairs often inconspicuous and not always white.
- 7 (8) Face clothed entirely with pale hairs, the clypeus with long white ones; 4th antennal joint never excessively short,* generally appearing in a front view of the antennae (or from beneath) about as long as wide; 4th abdominal segment with a regular row of white hairs, springing from the base of the apical impression and extending back about to the apex of this; mesonotum with fine remote punctures, the surface rugulose or granular-like between these. (Stigma pale whether seen from the upper or under surface of the wing)...
saundersella, n.n.
= *nana*, E. Saund. *nec* Kirby.
- 8 (7) Face in some species clothed either nearly wholly or else at the sides with black or sooty hairs; if the face is clothed with pale hairs, either the 4th joint of the antenna is very short, and transverse, or the mesonotal punctures are not as above or the stigma not pale.
- 9 (14) Face not clothed to a considerable extent with black or sooty hairs, but with brown, ochreous, or whitish ones.

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THE CANADIAN ENTOMOLOGIST.

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- 10 (11) Scutellum at most with a few extremely feeble and fine punctures on its dull surface, the mesonotum also dull and extremely feebly sparsely punctured, or sometimes both are impunctate or nearly so. (Stigma entirely dark, of a brown colour, not yellow)...
- subopaca*, Nyl.
- 11 (10) Scutellum sometimes to a greater or less extent shining or polished though sometimes dull; its punctures either distinct or numerous; the mesonotum either with irregular but distinct punctures, or with close and even ones.
- 12 (13) Mesonotum dull and nearly evenly, but not deeply, punctured...
- minutula*, Kirby.
- 13 (12) Mesonotum often shining in the middle (or even sometimes nearly all over); always smoother in the middle than in the preceding, the punctures deeper, but often sparser, and notably irregular in size and distribution *minutuloides*, sp. n.
- 14 (9) Face sometimes nearly wholly clothed with black hairs, or if to a large extent with brown or pale ones, then the sides of the face along the orbits are well clothed with black ones.
- 15 (16) Clypeus clothed with brown or yellowish hairs, and the face above with many brownish ones on the scapes of the antennæ and about these, the sides of the face with black ones, and there are others of this colour on the sides of the head behind the eyes; mesonotum mostly or entirely clothed with brown hairs in fresh examples (paler in old ones) *parruloides*, sp. n.
- 16 (15) Clypeus with longer black or sooty hairs, at least for the most part, and many sooty hairs on and about the scape of the antennæ; mesonotum generally clothed with long sooty or sooty-grey hairs.
- 17 (18) Stigma more or less dark or brown in the middle ... *parrula*, Kirby.
- 18 (17) Stigma very pale in the middle, yellow.

(Face almost entirely clothed with black or sooty hairs (some being sooty-grey), mesonotum and scutellum with sooty-grey ones; thorax sculptured much as in *parrula*; wings notably milky-white in some aspects; 2nd abdominal segment more punctured than in any *parrula* examined by me; the punctures shallow, numerous, the apical margin unusually dull, very finely but densely sculptured...

moricella, sp. n.

♀ ♀.

- 1 (2) Mesonotum densely and evenly, somewhat coarsely punctured, the surface between the punctures shining; 2nd and 3rd abdominal segments excessively densely and distinctly punctured, the slight amount of surface left between the punctures shining, their apical impressions distinct or strong, rugulose and bearing a number of shallow, scattered, but conspicuous, punctures *nana*, Kirby
(= *schenkella*, Pérez).

- 2 (1) Mesonotum never sculptured as above, either remotely or at least irregularly and unevenly punctured, or if closely, the surface between the punctures is dull; 2nd and 3rd abdominal segments, when punctured, with the punctures very feebly impressed, the surface rarely at all shining between them, but generally rugulose; in many forms impunctate, the apical impressions without conspicuous scattered punctures on a rugulose surface.
- 3 (6) Apical impression of the 3rd segment very strong across the whole width of the segment, that of the 2nd segment quite distinct and often rather strong (2nd segment nearly always punctured, the stigma pale).
- 4 (5) Abdomen with a thin transverse fringe of white hairs springing from the base of the apical impression of the 4th segment; this impression on the 3rd segment polished, the sculpture very feeble or wanting in the middle; very feeble and sometimes wanting on the 2nd segment also *sauandersella*, n.n.
= *nana*, E. Saund.
- 5 (4) Abdomen with a dense transverse fascia of white hairs on the 4th segment apically, a dense interrupted one also on the 3rd, and one still more widely broken on the 2nd; apical impressions on the 2nd and 3rd segments with extremely dense sculpture, appearing as a very dense puncturation. (Stigma always very pale) *spretta*, Pérez.
(= *niveata*, E. Saund. nec Friese).
- 6 (3) Apical impression of the 3rd segment feeble, at least on the middle part of the segment, that on the 1st generally not at all or barely distinguished except by a change in the sculpture.
(2nd segment in many forms impunctate, stigma in some not pale yellowish in the middle).
- 7 (10) 2nd and 3rd abdominal segments with evident, and more or less numerous, punctures amidst the rugulosity of the surface.
- 8 (9) 4th abdominal segment with a transverse apical fringe of conspicuous pure white hairs; mesonotal puncturation stronger and closer; apical appressed hairs of the 5th dorsal segment largely whitish or tinged with white, from some of the upper hairs being of this colour, always very pale.
(Mesonotum closely or fairly closely and evenly punctured, the punctures of moderate size or rather large; scutellum in front with deepish distinct, and plentiful punctures, the surface between them shining or polished, at least in some aspects) ... *alfkenella*, sp. n.
- 9 (8) 4th abdominal segment with a fringe of less conspicuous yellowish or pale golden hairs; mesonotal puncturation fine, either remote, or irregular; apical appressed hairs of the 5th dorsal segment brownish-golden or sometimes subfuscous in the middle.

* This joint is a good deal shorter in some examples than in others, but the long, more or less depressed, snowwhite clypeal hairs are very distinctive.

(Punctures of the scutellum generally shallow or sparse, its surface sometimes sufficiently rugulose all over to prevent the front part from appearing more than slightly shining in any aspect)

moricella, sp. n.

10 (7) 2nd and 3rd abdominal segments without any evident puncturation amidst the surface sculpture.

11 (12) Mesonotum excessively dull from the dense minute granular-appearing surface-sculpture, the punctures extremely fine and remote on the whole surface, even in proximity and inwardly to the smooth lateral lines (which lie inwardly to the tegulae), scutellum with the punctures fine, often dull and rugulose all over, rarely a little shining in front; stigma always dark, the appressed hairs of the 5th segment also dark, fuscous or brownish fuscous.

(Propodeum with the anterior area very rugose to the truncation, scutellum appearing large owing to its little convexity)...

subopaca, Nyl.

12 (11) Mesonotum not thus sculptured, either closely punctured at least near the lateral smooth lines, or else with very conspicuous or deep punctures, or the scutellum more or less polished; anal hairs often pale, golden, or yellowish; mesonotum sometimes more or less smooth and shining.

13 (16) Mesonotum dull all over, with dense sculpture between the punctures, which are dense or moderately close, and nearly even, never very irregular, nor very remote, always close in the neighbourhood of the smooth lateral lines.

14 (15) Puncturation of mesonotum generally much less distinct, in many aspects the punctures appear indistinct in outline, or more or less obliterated *parvula*, Kirby.

15 (14) Puncturation dense; very distinct over nearly the whole mesonotum in most aspects.....*minutula*, Kirby.

16 (13) Mesonotum sometimes shining or even polished in part, the punctures either very remote or else they are very distinct, and conspicuously unevenly distributed over the surface; scutellum often partly or largely very shining or polished.

17 (18) Mesonotum generally duller, the punctures sparser and finer.

(Hairs of 5th and 6th segments pale, yellow or golden; scutellum generally appearing more than usually convex)...*parvuloides*, sp. n.

18 (17) Mesonotum generally smoother, often partly or largely well polished, the punctures always stronger and more numerous.

(Anal hairs pale, as in the preceding, yellow or golden)...

minutuloides, sp. n.

(To be continued.)

AN EXCURSION TO SOUTHERN TUNISIA, WITH NOTES ON
SOME OF THE COLEOPTERA, &c., MET WITH.

BY G. C. CHAMPION, F.Z.S.

(Concluded from p. 55.)

KAIROUAN.—On the plain outside the walls of the city, and about the *Opuntia* hedges, *Ocnera*, *Pimelia*, *Blaps*, *Akis*, and the like abounded in their usual objectionable pabulum; and *Calosoma maderæ*, F., *Scarites* sp., and *Acinopus* sp., &c., occurred under stones. Many small forms were obtained by sweeping low plants about the cultivated ground; and in the marshy places, where we noticed not a few tortoises, several *Cicindelæ* (*C. lemnostieta*, Fairm., *C. littorea*, Forsk., &c.) were not rare, and a remarkable sluggish Stratiomyid Dipteran, *Nemotelus proboscideus*, Loew, was in profusion. In a sandy spot hereabouts, Dr. Santschi was kind enough to introduce me to the peculiar *Thorictus* (apparently *pauciseta*, Wasm.) which is carried about on the scape of the antennæ of the workers of the excessively active ant, *Myrmecocystus viaticus*. For two days on this Kairouan plain we were greatly tormented by the attacks of a sand-fly (*Simulium*), collecting on the hill of Djebel Baten, &c., being almost impossible on this account.

SBEITLA.—Here we spent nearly all our time about the ruins, which proved to be very productive ground, though on the third day the wind was so violent as to prevent the use of the sweeping net. Amongst or beneath the stones, where scorpions were unpleasantly numerous, the following beetles were observed:—*Cymindis* sp., commonly; *Adelphinus suturalis*, Luc. (a winged Helopid), in all its varieties, in abundance, the discrepancy in size and colour between the two sexes being remarkable; one or two species of *Adesmia* in plenty; *Microtelus lethierryi*, Reiche, *Adelostoma* sp., a *Micipsa*, *Pimelia semiopaca*, Sénac (?) (a common species at Sfax), an *Erodinus*, a *Zophosis*, a *Pachychila*, *Cardiophorus scapularis*, *Rhyttirrhinus* sp., *Hypera*, *Julodis*, *Timarcha*, &c. A fine metallic green, coarsely punctate Buprestid (*Aurigena* sp.) was not uncommon on a particular plant, and on the flowers of *Cruciferae*, &c., were to be seen, in more or less abundance, a large black *Mylabris*, *Omophlus cæruleus* F., *Hoplia pubicollis*, Küst., and many other species. Among the *Hemiptera*, *Putonia torrida*, Stål, was to be found commonly by sweeping, and *Crocistethus waltli*, Fieb., in all its stages under stones. Unfortunately the banks of the stream and the adjacent low hills were not investigated for want of time. From camel's dung by the roadside many

Aphodii, &c., were taken. Around the so-called Grand Hotel a *Timarcha* was so abundant that it was sometimes difficult to walk in and out without treading on one or more specimens.

SEFAX.—This coast place furnished many beetles, such as a large, convex *Crypticus*, in numbers, various *Pimelia*, *Erodinus*, and *Ophonus* a *Cymindis*, commonly, *Graphipterus*, and others. Inland but little was to be taken beyond various Mylabrids.

GAFSA.—The dry river beds (Oueds) and desert places in this district were fairly productive in such insects as *Graphipterus*, *Julodis*, *Mylabris*, *Erodinus*, *Pimelia* (including *P. cylindrica*, Sol. (?)), a peculiar *Pachybrachys*, &c. Here, too we came across many interesting *Orthoptera* (to which my Swiss companions paid especial attention), some *Hemiptera* not seen elsewhere, such as *Mecidea pallida*, Stål, &c. A slender pallid snake was frequently seen in these dry places travelling with great rapidity across the road or from one spiny bush to another, and in and about the irrigation channels in the palm-oasis, a soft-shelled aquatic tortoise abounded. In the Oued a *Cicindela* occurred commonly on the sand. At the indifferent hotel in the town, various small beetles were attracted to light, such as many pallid *Aphodii*, *Anemia* sp., *Hybosorus illigeri*, Reiche, *Bledius vitulus*, Er., *Oncophorus pirazzolii*, Epp. (a Staphylinid allied to *Acrognathus*), &c.

TOZEUR and NEFTA.—These desert places on the borders of the great Djerid Chott, and only separated therefrom by the palm-oases, proved to have a different fauna from that of the other places visited during our trip, and recalled that of Biskra, a district investigated by Mr. Morice and myself in 1911. The most interesting insects obtained by us were captured hereabouts, Nefta being quite similar in character to Tozeur, but the small forms found "at light" at Tozeur were probably of greater importance than the rest. Commencing with these latter, the following may be noted: *Eremazus unistriatus*, Muls., *Glaresis beckeri*, Solsky (?), a pallid Cistelid (unknown to me), *Anemia* spp. (in great numbers), *Hybosorus illigeri*, *Bledius vitulus*, Er., and *B. taurus*, Germ., var. *hædus*, Baudi, and var. *skrimshiranus*, Curt., and *B. unicornis*, Germ., *Oncophorus pirazzolii*, Epp., in abundance, a *Reduvius*, various Capsids, a *Nabis*, and others, including such cosmopolitan insects as *Mezium sulcatum* and *Alphitobius piceus*. On the sandy places between the saline Chott and the oases a very large hairy-footed *Pimelia* (probably *P. retrospiuosa*, Luc.) was sometimes to be seen in great numbers, especially in the early morning; and from 'stercore' hereabouts various *Aphodii* (including *A. constrictus*,

Klug), an *Oniticellus*, a peculiar little *Atheta* (*A. pellucida*, Fauv.), &c., were taken, the great *Scarabæi*, too, being much in evidence everywhere. From the succulent plants a fine Barid (*Lissotarsus bedeli*, Fairm.), a minute compressed pallid *Cassida*, a very small *Lixus*, and various other forms were beaten, and beneath such plants a large white *Cleonus* often occurred. From the flowers and herbage generally were swept *Himatismus perrandierei*, Mars., a handsome *Baris* (*corythia*, Desbr.), *Probosca viridana*, Schmidt, various peculiar pallid Mylabrids, *Scymnus arcuatus*, Rossi, and many others. The beautifully green, well-watered oases themselves, where many fruit trees and vegetables are cultivated beneath the date palms, were unproductive, though *Pheropsophus africanus* abounded near the irrigation channels, and a *Formicomus* and other Anthicids, *Typhæa*, and the like could be swept up. Along the whole length of the 16 mile track between Tozeur and Nefta, the fine black and white *Anthias* were constantly in sight, but difficult to secure, as they run with extraordinary rapidity between the stones or from one spiny plant to another. On this ground, too, *Graphipterus* were numerous, as well as various *Adesmia*, *Pimelia*, a pruinose flattened *Zophosis*, an occasional *Piestognathus asperipennis*, Fairm., and others. In one sandy spot near Tozeur a remarkable fragile Capsid (allied to *Pilophorus*, but not yet identified) occurred in some numbers about ant's nests. A fine *Melyris*, with red head and thorax, was twice found by my friend Steck on an Arab's burnous—once in the oasis and once in the train!—and these were the only specimens met with. An excursion on horseback out on to the great treacherous Chott, to places where the Arabs were washing out salt in large quantities, to see if there were any peculiar *Orthoptera*, &c., there resulted in failure, as did a trip to the oasis one night with an acetylene lamp.

EL DJEM.—The few hours spent here produced nothing better than the usual species of *Pimelia*, *Mylabris*, &c.

The very incomplete list of *Coleoptera*, &c., given above will afford a general idea of what is to be met with in the districts visited, and perhaps induce other entomologists to investigate the country. The railway now open to the south makes travelling easy, and at each of our stopping places there was a passable hotel, thanks to French enterprise.

Horsell, Woking.

February, 1914.

PHILHYDRUS HALOPHILUS, BEDEL: AN ADDITION TO THE
BRITISH LIST OF COLEOPTERA.

BY E. A. NEWBERRY.

Some time ago my friend Mr. Claude Morley sent me, among other beetles for names, a *Philhydrus* which I was unable to identify with any of the known British species. Thinking that it might possibly be *P. fuscipennis*, Thoms., a species not unlikely to occur here, and which is queried as synonymous with *P. ochropterus*, Marsh., in the 1906 European Catalogue, I sent some specimens to Capt. Deville for corroboration. He tells me that it is undoubtedly *P. halophilus*, Bedel, which he regards as a good species, and not a variety of *bicolor*, Fab. (= *maritimus*, Thoms.) as given in the above-named Catalogue. It is very possible that Marsham's *ochropterus*, if the type is still in existence, will be found to be the *halophilus* of Bedel, the former name having, of course, priority.

P. halophilus resembles both *frontalis*, Er. and *bicolor*, Fab. The following table will serve to separate the three species:—

A.—Elytra without series of setiferous pores; ♂ with claws angularly bent and head testaceous in front of eyes; ♀ with head entirely black and claws simple*frontalis*, Er.

AA.—Elytra with series of setiferous pores.

a. Head more or less fuscous or testaceous, but paler in front of eyes in both sexes, strongly punctured but not alutaceous behind the well-defined and angular transverse furrow; claws as in *P. frontalis* ...*bicolor*, Fab. (*maritimus*, Thoms.)

aa. Head black, with a testaceous triangular spot in front of eyes in both sexes, shallowly punctured and alutaceous behind the nearly straight transverse furrow, which is badly defined; claws as in *P. frontalis**halophilus*, Bedel.

As observed by Bedel, the series of setiferous pores on the elytra are very obscure, and it requires a certain amount of attention to observe them. *P. halophilus*, like its ally *P. bicolor*, is found in brackish water; it occurs in the Mediterranean region and also on the French coast of the Channel. The four specimens before me were taken by Mr. Claude Morley in a ditch on the coast near Bawdsey, Essex, in April, 1904.

13, Oppidans Road, N.W.:

March 3rd, 1914.

NOTES ON BRITISH PHILYDRUS.

BY D. SHARP, M.A., F.R.S.

I.—*P. fuscipennis*, THOMSON.

In his "Opuscula Entomologica" (No. 10, p. 1031, 1884) Thomson describes as a new species a Swedish *Philydrus* under the name of *P. fuscipennis*. His species has since been recognised by Ganglbauer (Käf. Mitteleur. 4, p. 246), who materially alters the characters assigned to it by Thomson, and adds that the insect is distributed over the greater part of Europe. Reitter also gives the species as distinct, and says that it occurs all over Germany, but is not abundant (Faun. German. 2, p. 363).

From this we may infer the probability of the occurrence of *P. fuscipennis* in Britain, and I have no doubt that it is fairly common here; as Ganglbauer states that it is in Europe generally.

It is very closely allied to *P. melanocephalus*. The distinctions are well summarised by Reitter, who gives as the characters of *fuscipennis*: "head and labrum in both sexes black, the sides of the former merely narrowly yellow-red in front of the eyes, the terminal joint of the maxillary palpi black at the tip." And he gives as contrasted characters for *melanocephalus*: "clypeus and labrum, at any rate in the male (which has the anterior claws incrassated), yellow-brown; terminal joint of the palpi not blackened, at the most indistinctly darker; colour of the upper side brighter."

These are likewise the characters given for the species by Ganglbauer, but with the addition that the punctuation of the upper surface is generally somewhat finer and less close than in *melanocephalus*.

If I am correct in considering we have both species in this country, then Ganglbauer has reversed the fact as to the difference in punctuation of the two, for, in Britain at any rate, the sculpture is closer and stronger in the darker of the two forms.

Thomson's description was evidently hastily drawn up; apparently he did not know that in the section of *Philydrus* to which these insects belong, the claws of the male front feet differ markedly from those of the female, and he appears to have compared a male of *fuscipennis* with a female of *melanocephalus*, and to have given the sexual difference in the claws as the most important character for specific distinction! Ganglbauer says that the male claws are similar in the two species, and he is correct in this.

Both *fuscipennis* and *melanocephalus* vary a good deal, and as the two forms are very closely allied, those entomologists who object to "splitting" will no doubt consider that they are variations of a single species.

The following particulars as to the series in my own collection will therefore have some interest. As regards the variation I should state as a preliminary, that the male in several species of *Philydrus* tends to differ from the female by a greater extension of the pale colour of the head.

Sixteen specimens taken at Garelochhead, on the Clyde, are all *fuscipennis*, exhibiting little variation, though one specimen has the elytra less tinged with black colour than the others.

Eight specimens from Morton, Dumfries-shire, April 24th, 1868, are all clearly *fuscipennis*; the coloration of the elytra is more variable than in the Clyde series; in three of them the front of the head is completely black, in the others the small yellow mark on each side is quite definite.

Four specimens from Keir, Dumfries-shire, May 4th, 1868, are all *fuscipennis*. Three of them have the head entirely black, one has a very obscure small yellow mark on each side of the clypeus, and only one of the four has the elytra strongly tinged with black.

One specimen from the Moor at Keir, October, 1867, agrees with the four last mentioned, except that the small yellow mark on the clypeus is distinct as in some of the Morton examples.

These redder examples are very similar to *P. nigricans*, and may not improbably be mixed with it in collections.

Two specimens from Rannoch, May, 1866, are typical *fuscipennis*, with the head entirely black.

One specimen from Padstow (C. G. Lamb) is an undoubted *fuscipennis*, though a crippled deformity, it has the yellow mark on the side of the head slightly larger than any Scottish example has.

New Forest, one specimen ♂, September, 1909. This is a most unsatisfactory example; it has a large yellow mark on each side of the head, and the labrum is yellow, but the apex of the palpi is black, both the labial and maxillary palps being so coloured. As regards this character therefore this example is *fuscipennis*, though the head is coloured as in *melanocephalus*. I believe it will prove to be an interesting aberration of the latter species.

From this review I have concluded that *P. fuscipennis* should be added to the list of British insects and that it is probably a good species; distinguished from *melanocephalus* by the darker coloration of the head, by the black tips of the palpi (which also are slightly shorter than in *melanocephalus*), and by the rather coarser and more definite punctuation of the elytra.

2.—*P. MELANOCEPHALUS*, Er.

In 1877 (Bull. Soc. Ent. France, p. clxxvii) Bedel pointed out that the species we have recognised under this name has been incorrectly treated as regards synonymy, and suggested that we should call it *quadripunctatus*, Herbst. He is followed in this by Ganglbauer and Reitter, and we may adopt this name, though in my opinion it would have been better to continue to follow Erichson.

As regards the occurrence of the species in this country I may remark that, though all my Scottish examples assigned to it prove to be *fuscipennis*, Th., in the South of England *P. quadripunctatus* (previously treated of under the name of *melanocephalus*) is not uncommon. Mr. C. J. C. Pool finds it at Southsea; I have met with it at Rainham and Horning, and have also a pair given me many years ago by Dr. J. A. Power as being *P. nigricans*.

3.—*P. FRONTALIS*, Er.

Erichson's description of *P. frontalis* was published, I believe, in the latter part of the year 1837, and it undoubtedly applies to the species we have hitherto called *nigricans*, Zett., but according to Hagen, Zetterstedt's description did not appear till 1838. We should therefore adopt the name given by Erichson. This change is an advantageous one.

P. frontalis is, according to my experience, the most abundant of this group of species, occurring in plenty both in England and Scotland.

4.—*P. MARITIMUS*, Th.

This species is also the unfortunate victim of a proposed change of name. Bedel, Ganglbauer, and Reitter call it *bicolor*, Fabr. The description of *bicolor* by Fabricius may possibly apply to *maritimus*. Erichson examined the type and considered it to be a variety of *P. testaceus* with pale vertex. Erichson, however, did not recognise *P. maritimus* which usually (though not invariably) has a pale vertex, and it is therefore probable that the type examined by Erichson may be really *maritimus*. Still this is not certain, and the description of

Fabricius (Ent. Syst. I, p. 184, 1792) is so poor that I think we should for the present continue to use the appropriate name "*maritimus*."

P. maritimus is not uncommon in brackish waters. I have found it in profusion at Lynnington, and Mr. Pool takes it freely at Southsea. At both these places a variety occurs that is so remarkable that I think it should have a name.

P. maritimus var. *brevipalpis*, n. Much smaller than the usual form, and with the maxillary palpi so greatly reduced as to be sometimes only half the natural length. This reduction affects the terminal joint most strongly, so that it is in the extreme cases merely a short oval appendage. Southsea and Lynnington, with the type form and varying like it in colour. The Lynnington examples were found by me in September, 1868; the Southsea example was sent me by Mr. Pool in April, 1912.

Brockenhurst:

February 10th, 1914.

A NOTE ON THE BRITISH SPECIES OF *SPHERIDIUM*, F.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

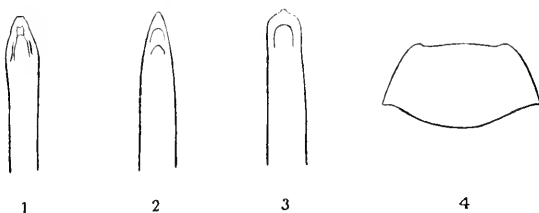
When examining my specimens of the genus *Sphæridium*, F., I failed to identify all of them with the help of the keys given by Fowler, Ganglbauer and Reitter, and a dissection of a few males demonstrated three very different forms of ædeagus. Some difficulty arose as to the name to be given to the third species, which has not been recognised as specifically distinct for many years. Marsham's description of his "*Dermestes quadrimaculatus*," although short, certainly seems to refer to it, and not to an aberration of *S. bipustulatum*, F., as suggested by Reitter in "Fauna Germanica," Käfer, Vol. II, p. 367.

The following is a short key to the genus:—

- I.—Form narrower and more convex; thorax with base strongly biarcuate (fig. 4), hind angles sharply rectangular; tibiæ yellow; ædeagus as in fig. 1. Length, 4·5—5·5 mm. *bipustulatum*, F.
- II.—Form broader and less convex; thorax with base slightly biarcuate, hind angles obtuse and slightly blunt.
 - i.—Thorax with at least front part of side-margins narrowly yellow, base distinctly biarcuate, hind angles less obtuse; tibiæ yellow; ædeagus as in fig. 2. Length, 5·5—7 mm. *quadrimaculatum*, Marsh.

- ii.—Thorax with side-margins concolorous, base scarcely biarcuate, hind angles more obtuse; tibiae pitchy-red; ædeagus as in fig. 3. Length, 6·5—7·5 mm.....*scarabæoides*, L.

With regard to colour, in all three species there is a form which has the elytra with a red humeral spot and the apex yellow. In *S. bipustulatum* it is rare, and the coloration is generally obscure. In *S. quadrimaculatum* it is the only form I have seen. In *S. scarabæoides* it is as common as a form with the humeral spot absent, or nearly so. *S. bipustulatum* has the side-margins of the thorax narrowly yellow or concolorous, and the elytra may be entirely black. In England the three species appear to be equally common, but I have not seen sufficient material to work out their distribution. In set specimens, fortunately, the tip of the ædeagus is often found projecting from the end of the hind body. The male is easily recognised by its abruptly bent claws.



DESCRIPTION OF FIGURES.

- 1.—Apex of middle lobe of ædeagus of *S. bipustulatum*.
 2.— „ „ „ „ *S. quadrimaculatum*.
 3.— „ „ „ „ *S. scarabæoides*.
 4.—Thorax of *S. bipustulatum*.

Bradfield, Reading:

March, 1914.

ANTHICUS BIFASCIATUS, ROSSI: A SPECIES NEW TO BRITAIN.

BY J. C. F. AND H. F. FRYER.

We are pleased to be able to add the above-mentioned insect to the list of British beetles.

The species is abundantly distinct from all the other members of the genus known to occur in Britain; it is smaller than *A. antherinus*, which it most nearly resembles, measuring from 2·5 to 3 mm. in length,

and is of a pitchy brown or black colour, with two yellowish-testaceous spots on each elytron. In some of the specimens in the British Museum (from Southern Europe) these spots, extending across the whole width of the elytron, unite and form a fascia, and this probably suggested the name *bifasciatus*. In our series, however, consisting of over sixty specimens, there is very little variation in the size of the spots, and in no case is there any suggestion of a fascia.

De la Ferté in his monograph of the genus (*Monographie des Anthicus et genres voisins*, p. 155), gives the following diagnosis, from which it is evident that he considered the spotted form the more usual: "nigro-piceus nitidus, sat profunde punctatus, vix pubescens; thorace postice rufo; elytris maculis duabus flavis; antennarum basis, tibiis tarsisque testaceis."

The insect was found in considerable numbers in old manure heaps in the neighbourhood of Chatteris, Cambridgeshire; it was not confined to a single heap, but was taken in several, a mile distant from each other, and must certainly be distributed over a wide area in this immediate locality.

Anthicus bifasciatus, according to de la Ferté, is known from Central and Southern Europe, France, Switzerland, Austria, and Germany as far north as Darmstadt; but it is probable that the records of its range have been widely extended since the author wrote his monograph (1848).

We are indebted to Mr. G. C. Champion for identifying the species, and to Mr. K. G. Blair for kindly forwarding specimens to Herr von Krich, an authority on the genus, who agreed in its determination.

The Priory, Chatteris:

March, 1914.

COLEOPTERA IN CAMBRIDGESHIRE AND HUNTINGDONSHIRE.

BY H. FORTESCUE FRYER, F.E.S.

(Continued from p. 13).

BUPRESTIDÆ.

Agrilus laticornis, Ill.*—Chatteris.

ELATERIDÆ.

Lacon murinus, L.—Chatteris, Holwoods. *Melanotus rufipes*, Hbst.—generally distributed. *Athous niger*, L.—Chatteris, Wicken, Warboys; *longicollis*, Ol.—Chatteris, Holwoods, Horseway; *hæmorrhoidalis*, F., and *vittatus*, F.

—generally distributed. *Limonius cylindricus*, Pk.—Chatteris, Warboys; *minutus*, L.—generally distributed. *Adrastus limbatus*, F.—Holwoods, Wicken, Wood Walton. *Agriotes sputator*, L.—Chatteris, Holwoods, Mepal, Cambridge; *obscurus*, L.—Mepal; *lineatus*, L.—Chatteris; *sordidus*, Ill.*—Mepal; *sobrinus*, Kies.—Warboys. *Dolopius marginatus*, L.—Warboys. *Corymbites quercus*, Gyll.—Wood Walton; *holosericeus*, F.—Colne Drove; *metallicus*, Pk.—Mepal. *Campylus linearis*, L.—Warboys.

DASCILLIDÆ.

Dascillus cervinus, L.*—Chippenham. *Helodes minuta*, L.—Chatteris. *Microcara livida*, F.—Chatteris, Doddington, Wood Walton. *Cyphon nitidulus*, Th.—Chatteris, Chippenham, Hemingford, Wood Walton; *variabilis*, Thunb.—Chatteris, Horseway, Holwoods, Wood Walton; *pallidulus*, Boh.—Chatteris, Holwoods; *padi*, L.—Chippenham.

LAMPYRIDÆ.

Lampyris noctiluca, L.—Wicken.

TELEPHORIDÆ.

Silis ruficollis, F.—Chippenham, Wicken, Wood Walton. *Telephorus rusticus*, Fall.—Chatteris, Doddington, Fleam Dyke; *lividus*, L.—Wicken; *pellucidus*, F.—Warboys; *nigricans*, Müll.—generally distributed; *lituratus*, Fall.—Hemingford, Warboys; *figuratus*, Mann.—Wicken, Warboys; *bicolor*, F., and *flavilabris*, Fall.*—Chatteris; *hæmorrhoidalis*, F.—Warboys; *thoracicus*, Ol.—Chatteris, Wicken, Wood Walton; *oralis*, Germ.—Horseway, Holwoods, Hemingford. *Rhagonycha fuscicornis*, Ol.—Chippenham; *fulva*, Scop.—Chatteris, Holwoods, Chippenham; *limbata*, Th.—Chatteris, Warboys. *Malthinus punctatus*, Fourc.—Holwoods, Warboys; *balteatus*, Suffr.*—Chatteris. *Malthodes marginatus*, Latr., and *minimus*, L.—Chatteris, Warboys. *Malachius raneus*, L.—Chatteris; *bipustulatus*, L.—Holwoods, Doddington, Warboys; *viridis*, F.—Chatteris, Holwoods, Wicken, Fleam Dyke. *Anthocomus rufus*, Hbst.—Horseway, Wicken; *fasciatus*, L.—Holwoods, Chippenham. *Dasytes ærosus*, Kies.—Chatteris, Warboys. *Haplocnemus nigricornis*, F.*—Warboys: one specimen on the wing.

CLERIDÆ.

Tillus elongatus, L.*—Holwoods. *Opilo mollis*, L.—Chatteris, Holwoods, Hemingford. *Necrobia rufipes*, F.—Cambridge. *Corynetes cæruleus*, De G.—Chatteris, Warboys.

PTINIDÆ.

Ptinus fur, L., and *Niptus hololeucus*, Fall.—Chatteris.

ANOBIIDÆ.

Priobium castaneum, F.*—Chatteris. *Anobium domesticum*, Fourc.—Holwoods, Warboys; *fulvicorne*, Stm.—Chatteris, Holwoods; *panicum*, L.—Chatteris, Cambridge. *Xestobium tessellatum*, L.—Chatteris, Holwoods. *Ptilinus pectinicornis*, L.—Holwoods, Hemingford. *Ochina hedcræ*, Müll.—Chatteris, Holwoods.

CISSIDÆ.

Cis boleti, Scop.—Holwoods, Doddington; *villosulus*, Marsh.—Chatteris, Holwoods. *Ennearthron cornutum*, Gyll.*—Chatteris. *Octotemnus glabriculus*, Gyll.—Warboys.

CERAMBYCIDÆ.

Aromia moschata, L.—Holwoods. *Clytus arietis*, L.—Chatteris, Holwoods; *mysticus*, L.—Holwoods, Colne Drove, Warboys. *Toxotus meridianus*, L.—Chatteris. *Strangalia armata*, Hbst.—Doddington; *melanura*, Warboys. *Grammoptera ruficornis*, Df.—Chatteris, Warboys.

LAMIIDÆ.

Leipus nebulosus, L.—Chatteris. *Pogonochærus dentatus*, Fourn., and *Agapanthia lineatocollis*, Don.—Wicken. *Saperda carcharias*, L.—Holwoods. *Tetrops præusta*, L.—Chatteris, Warboys. *Phytocia cylindrica*, L., and *Oberea oculata*, L.—Wicken.

BRUCHIDÆ.

Bruchus rufimanus, Boh.—Chatteris.

CHRYSOMELIDÆ.

Donacia limbata, Pz.—Chatteris; *impressa*, Pk.—Mepal; *simplex*, F.—Horseway, Holwoods; *clavipes*, F.—Holwoods; *semicuprea*, Pz.—Holwoods, Mepal, Hemingford; *cinerea*, Hbst.—Chatteris. *Lema cyanella*, L.—Chatteris, Holwoods, Wood Walton; *melanopa*, L.—Chatteris; *lichenis*, Voet.—Chatteris, Wimblington, Wood Walton. *Crioceris asparagi*, L.—Chatteris. *Cryptocephalus pusillus*, F.—Holwoods, Arrington, Wood Walton; *labiatus*, L.—Wood Walton. *Timarcha tenebricosa*, F.—Chatteris. *Chrysomela marginata*, Duft.—Holwoods; *polita*, L.—Chatteris; *graminis*, L.—Wicken; *fastuosa*, Scop.—Chatteris, Mepal. *Melasoma populi*, L.—Wicken. *Gastroidea viridula*, De G.—generally distributed; *polygoni*, L.—Chatteris. *Phædon tumidulus*, Germ.—Chatteris, Fleam Dyke; *armoracæ*, L.*—Chatteris; *cochleariæ*, F.—generally distributed. *Phyllodecta carifrons*, Th.—Wicken; *vitellinæ*, L.—Chatteris, Wicken. *Hydrothassa aucta*, F.—Chatteris, Mepal; *marginella*, L.—Mepal. *Prasocuris phelandrii*, L.—Chatteris, Holwoods. *Lochmæa cratægi*, Forst.—Doddington, Warboys. *Galerucella lineola*, F.—Chatteris, Wood Walton; *calmariensis*, L.—Chatteris Acre Fen, Holwoods; *tenella*, L.—Wicken. *Longitarsus dorsalis*, F.—Chippenham; *luridus*, Scop.—generally distributed; *suturellus*, Duft.—Chatteris, Holwoods, Wood Walton; *atricillus*, L.—Mepal, Old Hurst; *melanocephalus*, De G.—Chatteris, Doddington; *distinguendus*, Rye.—Chatteris; *flavicornis*, Steph.—Chatteris, Holwoods, St. Ives; *jacobææ*, Wat.—Chatteris, Holwoods; *femoralis*, Marsh. (*exoletus*, L.)—Chippenham; *ochroleucus*, Marsh.—Chatteris; *pusillus*, Gyll.—Old Hurst; *gracilis*, Knts.—Chatteris, St. Ives. *Haltica lythri*, Aubé.—Warboys; *oleracea*, L., and *pulustris*, Weise.—Fleam Dyke, Warboys. *Phyllotreta nodicornis*, Marsh.—Chatteris, Chippenham, Cherryhinton; *consobrina*, Curt.—Chatteris, Holwoods, Wimblington; *atra*, Pk.—

Chatteris, Holwoods; *undulata*, Kuts.—Chatteris, Holwoods; *nemorum*, L.—Chatteris, Holwoods, Kimbolton; *ochripes*, Curt.*—Chatteris; *sinuata*, Steph.—Holwoods. *Aphthona lutescens*, Gyll.—Wood Walton; *nonstriata*, Goez.—Wicken, Wood Walton; *venustula*, Kuts.—Kimbolton; *atrocærulea*, Steph.—Chatteris, Doddington. *Batophila ærata*, Marsh.—Alconbury. *Sphæroderma testacea*, F.—Chatteris, Acre Fen; *cardui*, Gyll.—Chatteris, Acre Fen, Old Hurst. *Mantura rustica*, L.—Chatteris, Holwoods. *Crepidodera transversa*, Marsh.—Chatteris, Wicken, Old Hurst; *ferruginea*, Scop.—Chatteris Acre Fen, Colne Drove; *ventralis*, Ill.—Wimblington, Wood Walton; *helvines*, L.—Warboys; *aurata*, Marsh.—Chatteris, Holwoods, Warboys; *smaragdina*, Fond.—Holwoods, Wood Walton. *Chætocnema hortensis*, Fourc.—Holwoods. *Plectroscelis concinna*, Marsh.—generally distributed. *Psylliodes chrysocephala*, L.—Holwoods; *cuprea*, Koch.—Chatteris; *affinis*, Pk.—Horseway, Hemingford; *dulcamaræ*, Koch,* and *chalconera*, Ill.—Chatteris; *picina*, Marsh.*—Wicken. *Cassida nebulosa*, L.—Holwoods; *nobilis*, L., and *flaveola*, Thunb.—Holwoods, Warboys; *viridis*, L.—Chatteris, Holwoods, Fleam Dyke, Wood Walton.

(To be continued).

SOME RECORDS OF SCOTTISH SIPHONAPTERA.

BY JAMES WATERSTON, B.D., B.Sc.

As a preliminary to drawing up a "Census" of the *Siphonaptera* of Scotland, I have intended for some time to publish notes of species (taken mainly in Shetland) added to my collection since the close of 1909. But through the great kindness of the Hon. N. Charles Rothschild, M.A., who has supplied a list of Scottish Fleas in the Municipal Museum, Warrington; in the British Museum; and in his own rich collection, it has been possible to enlarge considerably the scope of the paper at first contemplated.

From the MS. which Mr. Rothschild has supplied it appears that in Warrington Museum the following Scottish-taken fleas are represented:—*Ceratophyllus penicilliger*; *Ctenophthalmus agyrtes*; *Hystrichopsylla talpæ*. In the British Museum there are found:—*Spilopsyllus cuniculi*; *Ceratophyllus sciurorum*, *C. penicilliger*, *C. farreni*, *C. hirsutinus*, *C. columbæ*; *Ctenophthalmus agyrtes*; *Hystrichopsylla talpæ*. And in addition to the above eight species Mr. Rothschild has from Scotland:—*Pulex irritans*; *Archæopsylla erinacei*; *Ctenocephalus canis*; *Ceratophyllus fasciatus*, *C. gallinæ*, *C. garei*, *C. rusticus*, *C. styx*, *C. gallinulæ*, *C. vagabundus*, *C. borealis*, *C. rothschildi*; *Ctenophthalmus bisectodentatus*; *Doratomyia dasycnemus*; *Palæopsylla sorecis*, *P.*

minor, *P. kohauti*; *Leptopsylla spectabilis*; *Ischnopsyllus octactenus*. Some changes in nomenclature are to be noted since 1909. In the 1911 Edition (November) of Mr. Rothschild's "British Siphonaptera" Dampf's genus, *Archæopsylla* (1908), is employed for *Ctenocephalus erinacei*, Wagner's sub-division of *Ctenophthalmus* (1902) is adopted, and *Leptopsylla*, Rothsch. (1911) replaces *Ctenopsyllus*, Kolen.

Since 1911 *Ctenophthalmus* has been further sub-divided by the erection of *Doratomyia*, Rothsch (1912) for *A. dasycnemus*, while the genus *Rhadinopsylla*, Rothsch. (1912), differentiated for the reception of an Algerian flea, includes two British forms, *Ct. pentacanthus* and *Ct. isacanthus*.

A "List of British Fleas," embodying the above changes and revised up to March, 1913, will be found in Mr. H. Russell's useful manual, "The Flea," recently published by the Cambridge University Press.

Ceratophyllus rusticus, Wagn., with six months priority displaces *C. dalei*, Rothsch., while, as Mr. Rothschild has pointed out (Ent. Mo. Mag., p. 67, 1912), his *C. insularis* (1906) proves to be identical with *C. vagabundus*, Boh. (1865).

Of the genus *Palæopsylla*, Wagn. (1902)—for a critical understanding of which we are indebted to the exquisite researches (1910) of Dr. Alfons Dampf—three species, *P. sorecis*, Dale (1878); *P. minor*, Dale (1878), and *P. kohauti*, Dampf (1910), are now listed as British. Until the publication of Dampf's results, *P. sorecis* and *P. minor* were treated in English writings as one species under the name "*gracilis*, Taschb." It is uncertain, therefore, to what species any "*gracilis*" material hitherto recorded from Scotland is really referable. The presumption is that such examples belong to *P. minor* where the host was *Talpa europæa*, and to *P. sorecis* when taken from *Sorex* or *Crossopus*, but in any case re-examination is indispensable before such records can be relied upon. Out of the six species constituting the genus *Palæopsylla*, no fewer than four are attached to *Talpa europæa*. It is evident, therefore, that even if *P. similis*, Dampf (1910), and *P. atlantica*, Rothsch. (1912), should ultimately prove to be non-British forms, all *Palæopsylla* material from moles requires critical investigation.

In 1906 I recorded two fleas from *Sorex araneus* as *Ct. sorecis*, Dale, on Mr. Rothschild's identification—a record which still holds good.

In dealing with the data so generously put at my disposal by Mr. Rothschild, I have omitted any records previously published, or those which are covered by existing records of an earlier date. In three instances, however, *C. columbæ* (1) and *Ct. agyrtes* (2), this rule has been departed from, as previously the records were incompletely given.

In the present list special notice may be drawn to the occurrence of *Spilopsyllus cuniculi* on wild cat; to the numerous records of the rare *Leptopsylla spectabilis*; to the occurrence in Shetland of *Typhloceras poppei*, and to the extension of the host-range of *C. borealis*.

PULEX IRRITANS, L.

In Rothsch. Coll., the following—

- ♂, ♀. *Canis familiaris*, Donibristle, Fifeshire, J. Waterston. 23.x.05.
 2 ♀ ♀. „ Aberdeen, L. G. Esson. 25.xii.11.
 2 ♀ ♀. *Homo*, „ „ 5.xii.11

ARCHÆOPSYLLA ERINACEI, Bouché.

- ♂ ♂, ♀ ♀. *Erinaceus europæus*, Innerwick, East Lothian, S.iv.1899.
 P. H. Grimshaw. (Roths. Coll.).

SPILOPSYLLUS CUNICULI, Dale.

- ♀ from ear of cat. S. Sutor, of Cromarty, N. B. W. R. O. Grant, July, 1893. (Brit. Mus.).

- ♂ ♂, ♀ ♀, *Phalacrocorax carbo*, Cromarty, N. B. W. R. O. Grant, 10.iii. 1898. (Rothsch. Coll.).

- ♂ ♂, ♀ ♀, *Lepus cuniculus*, Hawick, Roxburghshire. 15.xi.1899. W. Hewitt. (Rothsch. Coll.).

- ♂ ♂, ♀ ♀, *L. cuniculus*, Guisachan, Beauly, N. B. Lady Tweedmouth. 5.1.01. (Rothsch. Coll.). Also same locality and collector, ♂ ♂, ♀ ♀, *Felis catus*. 1902. (Rothsch. Coll.).

- ♂ ♂, ♀ ♀, *Lepus cuniculus*, Kinloch Rannoch. F. J. Cox. 23.vii.08. (Rothsch. Coll.).

- ♂, ♀. *Felis catus*, Inverness-shire. Dr. E. A. Wilson, per Dr. G. H. F. Nuttall. 25.iv.07. (Rothsch. Coll.).

Occurs in numbers on *L. cuniculus* in the Ollaberry district, Northmavine, Shetland, both on the mainland and on islands in Yell Sound. 1910—1911.

The following are in the Rothsch. Coll., taken by L. G. Esson—

- ♂, *Mustela erminea*, Old Deer, Aberdeenshire. 10.ii.11.

- ♂, 3 ♀ ♀, „ Durris, „ 1.ii.11.

- ♀, „ Mintlaw, „ 8.ii.11.

- 91 ♂ ♂, 144 ♀ ♀, *Lepus cuniculus*, Achmore, Assynt, near Lairg, Sutherland-shire. March—July, 1911.

- ♂. *Lepus europæus*, Mosshead, near Lockerbie. 2.i.13. J. F. Cormack, Jun.;
 2 ♂ ♂, 2 ♀ ♀, *Lepus cuniculus*, ib.

CERATOPHYLLUS FASCIATUS, *Bosc.*

♀, *Hypudæus glareolus*, North Berwick, N. C. R. 11.ix.1898. (Rothsch. Coll.).

♀, *Mus sylvaticus*, Cromarty, N. B. W. R. O. Grant. 1899. (Rothsch. Coll.).

♂, 2 ♀ ♀, Balminnoch, Wigtownshire. Harold Schwann. Aug.—Sept., 1904. (Rothsch. Coll.).

♂ ♂, ♀ ♀, *Mus decumanus*, Carie, Rannoch, N. B. F. J. Cox. 15.vii.08. (Rothsch. Coll.).

4 ♀ ♀, *Mus decumanus*, Kirkcaldy. W. Mitchell. 8.xi.09.

In Rothsch. Coll., taken by L. G. Esson (1) in Aberdeenshire, the following:—

5 ♂ ♂, 15 ♀ ♀, *Mustela vulgaris*, Banks of Don. 4.x.11.

28 ♂ ♂, 36 ♀ ♀, *Mus decumanus*, Aberdeen. Oct.—Dec., 1911.

(2.) Kincardineshire.

♂, 6 ♀ ♀, *Arvicola amphibius*, Nigg. 27.xi.11.

(To be continued).

Another new Order of Insects.—In the “Bollettino del Laboratorio di Zoologia Generale e Agraria della R. Scuola Superiore d'Agricoltura in Portici,” Vol. VII, pp. 193–209 (1913), Signor F. Silvestri has described a new Order of Insecta, “Zoraptera,” to include three minute, apterous, exotic forms. These are all placed under one genus, *Zorotypus*, and the species are named *guineensis*, *ceylonicus*, and *javanicus* respectively. He states that the systematic position of the *Zoraptera* is near the Blattidæ and Isoptera. The form selected as type, *Zorotypus guineensis*, is figured, and the structure and anatomy of all three species is illustrated and described.—Eds.

Scopæus rubidus of British Collections: synonymical note.—This insect, which has hitherto only occurred in Britain at Slapton Ley, Devon, has been referred erroneously to *S. rubidus*, Rey. I have been unable to discover the origin of this error. The species stood as *S. ryei*, Woll., in our Catalogues down to 1883. In 1888, Fowler (Col. Brit., Vol. II, 138) gives the synonymy as:—“*S. rubidus* (*subcylindricus*, Scriba; *ryei*, Woll.),” presumably having copied the European Catalogue of 1883, which work, strange to say, omits *S. minimus*, Er., altogether. In the last European Catalogue (1906), *S. ryei* is given as a synonym of *minutus*, Er. As long ago as 1873, Rye (Ent. Mo. Mag., X, 138) states that “*S. rubidus*, Muls., is at all events quite distinct from *S. ryei*, Woll.”

With a view to settling the question of the synonymy, I sent examples of the Slapton Ley insect to Capt. Deville, reversing a male so as to show the underside characters. He tells me that after comparing my specimens with a large number of *S. minimus*, Er., from Central and Southern France, he is of opinion that they are identical. He very kindly sent me a specimen of

S. rubidus, Rey, for comparison; it is evidently distinct from *S. ryei*, Woll. The synonymy therefore appears to be:—*Scopæus minimus*, Er.

ryei, Woll.

rubidus, Brit. Cat., nec Rey.—

E. A. NEWBERY, 13, Oppidans Road, N.W.: March 15th, 1914.

Ocyusa defecta, Rey, in Westmorland.—Among a number of more or less interesting beetles, taken during a flying visit to Witherslack last June, was a small *Homalota*-like insect which I suspected might be the above. Mr. Newbery, with his usual kindness, passed the specimen on to Capt. Deville, who confirms the naming. This is only the second record of *O. defecta* for the British Isles. The first specimen was taken in Devonshire by Mr. S. G. Rendel in 1908, and introduced by Mr. Newbery as British in Ent. Mo. Mag., 1909, p. 150. The capture of the species in such widely separate counties as Devon and Westmorland, suggests the probability of its occurrence in some of the country intervening. My specimen was taken in the sweeping-net while working over a marshy piece of ground. Apparently it is a rare species on the Continent.—F. H. DAY, 26, Currock Terrace, Carlisle: March 3rd, 1914.

Proteinus limbatus, Wahlb. (*crenulatus*, Pand.) in Westmorland and Cumberland.—Another of my Witherslack captures worth recording is the above, of which I took one specimen by sweeping. It is a male, and the remarkable crenulations on the anterior edge of the intermediate tibiæ are very distinct. The species was brought forward as a British insect by Dr. Sharp (Ent. Mo. Mag., 1909, p. 267), he having taken four specimens at Nethy Bridge a year or two previously. On showing my specimens to Mr. Britten, he examined his series of *P. brachypterus*, Er., and promptly found two examples of the rarer insect, taken in the parish of Great Salkeld, Cumberland.—F. H. DAY: March 3rd, 1914.

Aradus lawsoni, Saunders—synonymical note.—I have long had a suspicion that *Aradus lawsoni*, Saund., described in 1877 from a single specimen from Lawson's collection, was not a native of this country, so many doubtfully British Scolytidæ (*Xylechinus pilosus*, *Polygraphus pubescens*, *Tomicus typographus*, &c.) having been captured by him in timber (probably imported for pit-props) in the Scarborough district. On calling Dr. Bergroth's attention to this insect he writes me as follows: "Saunders' description and good coloured figure of *A. lawsoni* agree perfectly well with Finnish specimens of *A. truncatus*, Fieb. There can be no doubt that the two insects are synonymous, and this is also the opinion of Prof. Sahlberg and Dr. Poppius. *A. truncatus* occurs in Germany and four or five places in France, as well as in Finland, but it has not yet been found in Sweden or Norway. It appears to be very rare everywhere." In Saunders' continental collection of Hemiptera, which is now in the British Museum, there is a specimen of *A. truncatus*, Fieb., from Mt. Doré, Auvergne (received during recent years from M. de Buysson), agreeing perfectly with his type and figure of *A. lawsoni*, thus confirming Dr. Bergroth's identification.—G. C. CHAMPION, Horsell, Woking: February 5th, 1914.

Synonymy of Neoneurus halidatii, Marsh., with Elasmosoma berlinense, Ruthe.—Hardly was my note on the former of the above names published (Ent. Mo. Mag., 1914, p. 16) before I discovered Ruthe's species to be identical with that of Marshall, a female which I believe to be the type-specimen of the latter, having been found in his collection in the British Museum. This ignorance on the part of British Hymenopterists is entirely accounted for by the incorrect position assigned to the genus *Elasmosoma* by the Continental authors, accentuated by the supposed ignorance of the Rev. T. A. Marshall in 1888 (Bracon. d'Europ. ii, 551), and the immature condition of the venation in this type—well shown in the figure (Berl. Ent. Zeitschr., 1858, pl. iii, fig. 2) which, so far from possessing Thomson's "Framvingarnes cubitus utgar straxt ofvan midten af vena basalis, areolan är nästan fyrkantig" (Opusc. Ent., xx, 1895, p. 2276), shows little of the former and nothing whatever of the latter feature. No areolet is traceable in any specimen I have yet examined, and I believe the authors who place this genus in the "Aréolaires" have done so à défaut de mieux, or as Thomson unhappily remarks (of a purely nomenclatorial subfamily) "species habitu fere Apantelis, alarum nervis mox distincta"! Since Giraud's reference to the myrmecophilous habits of this genus (Ann. Soc. Ent. France 1870, p. lvii et 1871, p. 229) Olivier has published notes upon it (Bull. lib. cit., 1893, p. lxxi et Rev. Sc. Bourbon. 1893, p. 112), supplemented by M. L'Abbé Pierre (lib. cit.). Giraud professes to have distinguished a second species of the genus from Austria, and Thomson adds a third from Sweden; what Ashmead's three Nearctic forms may be I have no idea.—CLAUDE MORLEY, Monk Soham House, Suffolk: March 1st, 1914.

A humble-bee attacked by a Dipteron.—On April 22nd last as I was standing on a walk in my garden, about 11 a.m., the day being bright and sunny, I heard a very loud hum, resembling that of a gnat, but greatly intensified, and looking down saw what I feel sure was a fly and not a bee, though it resembled a small, hairy, golden-brownish bee, hovering like a *Syrphus*, a few inches above the ground and vibrating its wings most violently with an appearance of great determination and rage. After continuing thus for perhaps 15 seconds, it suddenly darted at a medium-sized black humble-bee, which was sitting on the ground about a foot in front of it, and settled on its back, the bee at the same moment flying away. They parted company before they had flown more than a yard or two, but I could not see what became of them afterwards. I had understood that these flies that mimic bees laid their eggs in the bees' nest, escaping notice through their similarity to their hosts, but here there was no obvious advantage in the resemblance. Though I have collected *Lepidoptera* for many years in many localities I have never seen such an occurrence, and should be interested to know whether the attack was made with the object of sucking the juices of the bee or laying an egg on its hairs or in its body. If on the hairs, the larva might in this way be conveyed to the bees' nest and prey on the bee larva. My impression was from the attitude when the two insects were together, that the object was egg-laying, but the movements were so quick that it was impossible to be certain. The bee seemed to have no sense of danger

during the humming, which one would have expected to have the same warning effect as a gnat's hum on oneself. Possibly it was fascinated or paralyzed by fear. Mrs. Richardson also witnessed the occurrence and drew the same conclusions. The whole effect was horrid, and suggested an aeroplane hovering above with great noise, and preparing to drop a bomb!—NELSON M. RICHARDSON, Montevideo, near Weymouth: *January 30th, 1914.*

A chloroform killing and relaxing bottle.—For the purpose of killing insects for the entomological collection, chloroform has manifest advantages in its rapid and painless action, as well as in the fact that it rarely affects the colours of specimens, which are often seriously impaired through the use of laurel and other killing agents in general use. There is, however, one very serious and well-known objection to chloroform in that it renders the specimens so rigid after death that it is often extremely difficult to set them properly, and this objection is most insistent in the case of small species. To attempt to meet this difficulty I have recently devised a special killing bottle, and as it is possible a similar bottle has not already been used by others it may be desirable to describe it. A wide-mouthed glass jar with a metal screw top is suitable, the screw top being furnished inside with the usual cardboard disc, which may be supplemented by the insertion of several similar discs of blotting paper. A piece of sponge about the size of a large pea should be firmly attached, by means of a fine wire, to the cardboard in the screw top. This sponge is intended to receive a few drops of chloroform, which is thus effectively kept from direct contact with the specimens in the jar. At the bottom of the bottle itself a much larger sponge an inch or two in diameter, partially saturated with water is placed, the remaining space in the lower portion of the jar being subsequently filled up with cotton wool and the whole held compactly down by means of a tight-fitting cardboard disc. Such a bottle will, of course, "sweat" in the same way as a laurel bottle; the portion above the cardboard disc therefore requires to be dried when moisture accumulates on the glass. I have found that insects killed with chloroform in a bottle of this design are usually fairly well relaxed in about 12 hours, and can then be set almost as easily as those killed with laurel.—G. V. HUDSON, Mount Earnslaw Hut, near Lake Wakatipu, New Zealand: *January 13th, 1914.*

Wet seasons and Acarid parasites on insects.—I find that nearly every insect captured in this locality has one or more red Acarids attached to it, and in some cases three or four Acarids have affixed themselves to a single specimen. This infestation is not confined to *Lepidoptera*, but is observable in the case of *Neuroptera*, *Diptera*, etc. I recollect noticing the prevalence of these parasites whilst collecting in this locality during the wet summer of 1902–1903. It is obvious that in wet cold seasons such as the present, *Lepidoptera* and other flying insects must spend prolonged periods resting in sheltered spots waiting for a spell of warm fine weather suitable for flight, and it seems a reasonable assumption that it is during these prolonged waits that the Acarids attach themselves to their unfortunate hosts. As a matter of fact, I am at present detained

in the hut on Mount Earnslaw, and have been waiting for over two days for a few hours of fine weather to resume collecting.—G. V. HUDSON: *January 13th, 1914.*

Change of name for Andrena ambigua, Perk.—This name being pre-occupied, I propose that the species be called *Andrena synadelphus* n.n.—R. C. L. PERKINS. L

Review.

SECOND SUPPLEMENT TO THE LEPIDOPTERA OF THE ISLE OF PURBECK.
By NELSON M. RICHARDSON, B.A.

We are glad to see this "Supplement" which brings our knowledge of the *Lepidoptera* of a most interesting district up to the end of the year 1910. The additions are mostly due to the energetic work of Mr. Eustace R. Banks, who, but for his unfortunate illness, would have compiled the List, and which also probably accounts for its somewhat late appearance, and that it is not brought more nearly up to present date. In all, 171 species are added to the two previous lists, making 1,197 now recorded for Purbeck: a very large total for so small a district. The additions include many rare and interesting species, of which the histories are given in full detail; but among them are also a number which are ordinarily regarded as of so universal distribution, that one wonders how they came to be so long overlooked that they did not appear in the earlier lists. *Phigalia pilosaria*, *Noctua baia*, and *Adela viridella* may be taken as instances. There are, too, more "Delenda et corrigenda" than ought to have been necessary, had the specimens been properly overhauled and authenticated before the publication of the earlier lists, a score of species being treated under this heading. The "Supplement" is well got up and clearly printed, and forms part of the "Proceedings" of the Dorset Natural History and Antiquarian Society, Vol. XXXIV. 1913.—G. T. P.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: ANNUAL MEETING of the Society held at the Royal Institution, Colquitt Street, Liverpool, on *Monday, December 15th, 1913.*—Mr. F. N. PIERCE, F.E.S., President, in the Chair.

Mr. John M. Wilding, 52a, Orrell Lane, Liverpool, was elected a Member of the Society.

The following Members were elected Officers and Council for next year, viz.:—*President*: R. Wilding. *Vice-Presidents*: F. N. Pierce, F.E.S., R. Newstead, F.R.S., M.Sc., J. R. le B. Tomlin, M.A., F.E.S., H. R. Sweeting, M.A. *Hon. Treasurer*: J. Cotton. *Librarian*: F. N. Pierce. *Hon. Secretary*: Wm. Mansbridge, F.E.S. *Council*: L. West, H. S. Leigh, F.E.S., A. E. Gibbs, F.L.S., F.E.S., A. W. Boyd, M.A., F.E.S., C. E. Stott, P. F. Tinne, M.A., S. P. Doudney, Wm. Webster, R. S. Bagnall, F.L.S., F.E.S.

Mr. F. N. Pierce delivered the Presidential address, taking for his subject "The Hairs and Scales of *Lepidoptera*." The President described in detail his original observations upon this branch of insect morphology and illustrated the same by many drawings and microscopic preparations. In the course of his remarks he described a difference he had found between certain scales in *Tephrosia crepuscularia* and *biundularia* and stated that this was the only difference of a structural character he had been able to discover in these two species. Mr. R. Wilding brought a specimen of *Eubolia bipunctaria* for exhibition and stated that it was taken by himself so long ago as July, 1880, but he had never before recorded it. Captured at West Kirby; this is the second record of this unlikely moth for our two counties. Dr. J. Cotton showed a number of colour photographs of *Lepidoptera* by the Paget process and pointed out the advantages of these plates over the older processes.

Monday, January 19th, 1914.—Mr. R. Wilding, President, in the Chair.

A discussion upon "Varieties and Species recently added to the local list of *Lepidoptera*" was opened by Mr. W. Mansbridge. Novelties were confined almost entirely to the *Micro-Lepidoptera* and to variation. Twenty-six species new to Lancashire and Cheshire since the last published list were enumerated, one of them, *Scoparia rafra*, Meyr., being new to science. The increasing tendency to melanism and spread of melanic forms was commented upon, instances being *Boarmia repandata* becoming more frequent at Delamere in its black form (var. *nigra*); *Fidonia atomaria* from near Burnley and Chat Moss; *Tortrix costana* from Liverpool and Burnley. He also mentioned that the black forms of *Aplecta nebulosa* did not appear to be increasing in relative numbers at Delamere; on the contrary, in 1913 the percentage was smaller than usual from wild larvæ.

Mr. S. P. Doudney exhibited a specimen of *Charocampa celerio* captured at Prescott, and Mr. W. Mansbridge brought a specimen of *Catocala fraxini*, having very dark, almost black forewings, bred from a Sussex female.

Monday, February 16th, 1914.—The President in the Chair.

This meeting was a joint one with the Manchester Entomological Society, who were invited to tea by the Council.

A large number of exhibitions were made including the following, viz.:—A small collection of insects from the Amazons by Mr. C. H. Walker. Prof. Newstead and Mr. Watson of Manchester made remarks upon this exhibit, describing the habits and life-history of the more noteworthy species. Mr. V. Coryton, of Manchester, a fine melanic specimen of *Plusia gamma*, as well as a bronzy form and the typical insect for comparison, also *Trochilium crabroniforme* *Noia cucullatella*, *Eupithecia fraxinata*, and a short series of *Peronea variegana*, all from the Brooklands district of Cheshire. Mr. R. Tait, Jun., full-fed larvæ of *Epunda lichenea* found in the open in N. Wales on January 10th; many then found had already pupated. He also made some remarks upon the early date. Mr. B. H. Crabtree showed varieties of *Abraxas grossulariata* as follows, viz.:—*lacticolor-radiata*, *lacticolor-cuneata*, *iochalcea*,

flavopalliata, and *flavopalliata-cuneata*. Mr. W. Mansbridge, a long series of *Fidonia atomaria* from the Burnley district, bred by forcing in a warm room in January, including many dark forms; also a series of *Odontopera bidentata* var. *nigra*, which emerged in January in a cold room. Dr. P. F. Tinne, a series of *Cidaria reticulata* from Windermere. Mr. R. Wilding, *Satyrus semele*, English and Irish forms, *Pieris napi* from Ireland, Kent and the coast sand-hills, also *Melitæa artemis* from Ireland. Mr. F. N. Pierce had on view the drawings for his forthcoming work, "The Genitalia of the British *Geometræ*," as well as preparations under the microscope.—WM. MANSBRIDGE, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
Thursday, February 12th, 1914.—Mr. B. H. SMITH, B.A., President, in the Chair.

Mr. B. Williams of East Finchley, and Prof. Meldola, F.R.S., were elected Members.

Mr. H. Rowland-Brown discussed the matter of "Nature Reserves," and appealed for further financial aid and suggestions for the care of these areas. Rev. G. Wheeler read a paper on "The Genus *Melitæa*," and exhibited many European species. Mr. A. E. Gibbs, his collection of the American species of the genus *Melitæa*, with species of the allied genus *Phyciodes*. Mr. Curwen, series of most of the European species of *Melitæa*. Mr. J. Platt Barrett, series of Sicilian *M. athalia* and *M. didyma*. Mr. Edwards, species of *Phyciodes* and *Coatlantona* from South and Central America.

Thursday, February 26th, 1914.—The President in the Chair.

There was a special Exhibition of Lantern Slides by Members. Mr. Tonge, various details of Lepidopterous life-histories. Mr. C. W. Williams, organisms obtained by using the Berlese apparatus, and details of *Coniopteryx* and *Aleurodes*, etc. Mr. West, various species of *Collembola*, etc. Mr. Dennis, illustrating various British galls. Mr. Colthrup, illustrating the resting positions of Lepidopterous imagines. Mr. Frohawk exhibited a series of *Anosia plexippus* bred from ova laid by a ♀ sent alive to this country. Mr. Main, for Mr. Sharp of Eastbourne, a bred gynandromorph of *Eriogaster lanestris*, left side ♂, right side ♀. Mr. W. J. Kaye, the Syntomid *Diptilon halterata*, which is readily taken for a species of *Diptera*.—HY. J. TURNER, *Hon. Secretary*.

THE DISTRIBUTION OF *CARABUS CLATHRATUS*, L., WITH AN ATTEMPT TO CONFUTE THE RECORD OF ITS OCCURRENCE IN ENGLAND.

BY CLAUDE MORLEY, F.Z.S., F.E.S.

I.

"The first indigenous specimen of this striking and elegant insect," says Stephens (Illustr. Mandib. i, 1828, p. 54), "was taken by Mr. Haworth at Halvergate in Norfolk in the year 1809, subsequently

to that period others were taken there," as well as in Scotland and Ireland; in spite of his certainly correct reference of the unnamed upper figure in Donovan's British Insects, Vol. XV (1811), pl. 526, to the same species in the Manual of 1839, p. 15, where it is again mentioned from "Halvergate Marsh, Norf.; Caithness, &c., Scotland; and near Dublin" in April to June.

In Stephens' Catalogue of 1829, the reference to Haworth's record is Trans. Ent. Soc. i, p. 338; this is the old Entomological Society, which published but a single volume of Transactions, dated 1807 (though actually issued 1807-1812, teste Sherborn in litt.); the first volume of the present Society appeared in 1836. A. H. Haworth's record in his "A brief Account of Some rare Insects announced at various times to the Society, as new to Britain," is:—

"32. *clathratus*. *Carabus*. *apterus nigricans*, *elytris aeneis*, *striatis interjectis punctis excavatis cupreis*.

"Fab. Syst. Eleut. i. 77. Panz. Faun. cum icone.

"I first took this in a Marsh at Halvergate, Norfolk, April, 1809: since when several others have been there taken."

This is all; and it certainly seems to describe the insect, excepting the word "*striatis*," which would be inappropriate (as Mr. Newbery very truly remarks to me, in litt.) to our modern ideas, as the coppery impressions are not separated by *striae* but by raised *costae*; and Mr. Ernest Elliott suggests that some such insect as *C. hortensis* was mistaken for it. Doubt of its occurrence in the Marsh may be gathered from Samouelle (Entom. Useful Compendium, 1819, p. 364) "Near Halvergate Marsh, Nor." What became of the specimens taken by Haworth and his contemporaries is quite unknown; the four examples of this beetle in Stephens' Collection are, as is there usual, without labels.

II.

Mr. Edwards, in his Fauna of Norfolk: Coleoptera (Trans. Norfolk and Norwich Nat. Soc. 1893, p. 433), quotes Stephens and adds: "April, in drills, Halvergate Marshes (Curtis). Burgh marshes, very rare (Paget). This well-known Scotch species was evidently distributed by Robert Scales to the collectors of his day from Halvergate, where he resided for a few years prior to 1812; but beyond the foregoing notices there is no other record of its ever having occurred in England." In the same paper (lib. cit. p. 427) Mr. Edwards reverts to lib. cit. vol. IV, 1885, p. 97-109, where "we find Robert Scales

sending to William Spence from Halvergate *Carabus clathratus*, an insect only found nowadays in Scotland and Ireland."

C. and J. Paget in their "Sketch of the Natural History of Great Yarmouth and its Neighbourhood," 1834, also record the species from Belton Bog, which is in Suffolk, in June; and we find a second record from Bungay in the same county in the last volume of Morris' *Naturalist*, 1858, p. 16: "*Carabus clathratus*.—Once by my father, a few years ago, close to the town, and is now in our collection. W. Garneß." [This is Dr. W. Garneys of Repton, the friend of Canon Fowler and Dr. Mason, who died in 1881, and whose collection, upon the death of his widow (since 1905) passed into the former's hands. Canon Fowler has been so good as to tell me that there was at that time specimens of neither *C. clathratus* nor peculiar forms of *C. granulatus*, which might have been mistaken for it, in the collection]. Edwards quotes this in brackets (*Trans. Norf. Soc.*, 1899, p. 521); and both the county records are referred to by me in "The Coleoptera of Suffolk" (J. H. Keys, Plymouth), 1899, p. 1. They appear to have been overlooked or considered too doubtful for reproduction in Fowler's "*Col. Brit. Isles*," I, 1887, where the Halvergate record is accredited to Stephens; but in the Supplement of 1913 both are entered. Excluding Scales' obscure captures, we have approximately the dates: Haworth at Halvergate, in 1809; the Pagets at Burgh and Belton, in 1833; and Garneys at Bungay, in 1855.

The only entirely satisfactory method of proving these (at least) four specimens to have been erroneously determined is by examination of the individuals in question; and this is, in the circumstances, obviously impossible nowadays—even the latest example has disappeared. But we may, in a negative method, show at least the extreme improbability (in my own mind it amounts to impossibility) of the occurrence of *Carabus clathratus* in East Anglia. It is not impossible, though improbable, that Thomas Marsham did not know the species; both the Pagets were little more than boys, and Garneys in 1855 only twenty-three years of age. Marsham obviously relied largely for his determination upon Panzer's figure, which certainly refers to the species under discussion [Panz., *Faun. Insect. German.*, lft. 75 (1801), No. 1].

That one of our other species, or a peculiar form of one, was misnamed is far from being impossible: Mr. Newbery writes to me that in 1913, at Potter Heigham, in the Norfolk Broads, he took "a remarkable *Carabus* in a haycock. I make it a large, bright, brassy

variety of *C. granulatus*. At first sight it looks different to any British species, though it can hardly have been mistaken for *C. clathratus*, unless the finder had never seen the latter"; which was by no means improbable in all the above four cases. Large dark *C. granulatus*, such as those in the British Museum from Dartmoor, are not dissimilar to Panzer's figure.

III.

"*Carabus clathratus* is not a beetle easily overlooked, and would probably have been discovered if it existed in Wales, where areas apparently eminently suitable for it are abundant," says W. E. Sharp, (Entom. Rec. 1901, p. 204). The above notices are all we have from the whole of England, and J. J. Walker's statement that "it is certainly not a species of common occurrence in England (judging from the few specimens I have seen in collections)," Ent. Mo. Mag., XVII, 1880, p. 42, is too indefinite to be of any bearing on the question.

"It is well known that this grand *Carabus* is no rarity in some parts of Ireland," he very truly says (loc. cit.); Fowler, in 1887, mentions Enniskerry, Westport, and Donegal, though in 1913 he considers it widely distributed throughout Ireland, probably on the full data supplied in Johnson and Halbert's Irish List, of 1902; the latter authors record it in the "Terrestrial Coleoptera of Clare Island" (Proc. R. Irish Acad. 1912, p. 3) from Clare Island, Achill Island, Innisbofin, Doo Lough, Louisburgh, Innisturk and Westport, but consider its distribution to be northern. It may be commoner there, though by no means unknown in the south, for the Dublin Museum contains it from Roundstone, in 1896; Rarteen bog at Limerick, in 1901; Leenane, in 1897; Rathlin, in 1897; the Great Sugar Loaf, in 1897; Croaghmore and some of the above-mentioned localities. Further south-west it is certainly rare, and we failed to see it at all in Waterford, Kerry, Limerick, Tipperary, or Dublin, during a six weeks visit last summer, though Mr. Bullock of Killarney, showed us one he himself had captured beneath a stone on peat, about 800 feet up Bull Mountain, at the Gap of Dunloe (where we spent two hours' fruitless search for it), and another from Galway. The British Museum has it from Kerry Hill, October, 1885 (Power), and Kerry Mountains, 1877 (J. A. Brewer). Haliday's MSS., preserved at Dublin, tell us it used to occur in "Connemara peat bogs passim," etc. (for other Irish records, cf. Ent. Rec., 1902, p. 240; Ent. Mo. Mag., XVII, 1880, p. 42; XXVIII, 1892, p. 311; XXXVIII, 1902, p. 178; etc.).

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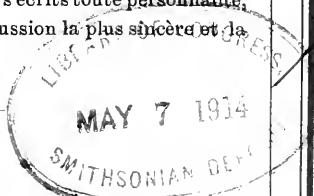
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The Scots records are much less numerous and it is said to be "local, but rather widely distributed, Lowlands and Highlands, Clyde, Argyle, Dee, Sutherland; abundant in Mull, Hebrides," and not uncommon in the I. of Tiree, by Fowler. The northern localities are also given in Sharp's *Coleoptera of Scotland*; and in the British Museum is one from the Orkney Isles in his collection. Grimshaw tells me there is a good series in the Edinburgh Museum of Science and Art (for other Scots records, *cf.* Ent. Mo. Mag., XXXI, 1895, p. 183 [melanic]; XXXVII, 1901, p. 279; etc.). Two of the six examples in the Power Collection are from Morris Young, probably from Paisley. According to Reitter the var. *jansoni* is a small form occurring in Scotland.

Its distribution in the Palearctic region is very wide, though I find no records outside Europe. Seidlitz in 1891 terms it "Im. nordl. u. mittl. Eur., b. uns. selten"; the last European Catalogue by Heyden, Reitter and Weise, in 1906, gives the range of *Limnocarabus clathratus*, L., as north and central Europe, and its six varieties from "Germania, Dania, Lenkoran on the Caspian sea coast, the Caucasus, and Arles in Gallia." Barthe, in "Miscell. Entom. Narbonne," gives Northern and Central Europe as far as Upper Italy in the south, and the Caucasus in the east; and Holland, Belgium, Luxemburg, Savoy, and a number of French localities as its Gallo-Rhenish distribution. In "Fauna Germanica," I, 1908, Reitter details "Saxony, Magdeburg, Nassau, Upper Silesia," and a variety from Borkum. Bertolini in his "Catalogo Coleott. d'Italia," of 1904, details "Trentino, Veneto, Toscana, Liguria." It is evidently common in Siberia from Heyden's remarks in his "Catalog der Coleopteren von Sibirien," of 1880; but it does not seem to extend to the Peninsula, as it is not included in Oliveira's "Catalogue des Insectes du Portugal"; nor is it found in either Madeira or the Canary Islands.

IV.

This distribution, so far from showing that the species is unlikely to occur in England, goes to prove us to be surrounded by it on all sides. Certainly "the occurrence of *Carabus clathratus* in Norfolk, if it rested on absolutely unimpeachable evidence, would undoubtedly be a trace of [species'] emigration from south-east to north-west", but hardly sufficient to prove that this species reached Donegal and the Hebrides *viâ* East Anglia," as W. E. Sharp explains (Ent. Rec., 1901, p. 203).

That the insect does not now occur in East Anglia I have not the least hesitation in stating to be absolutely certain. I have collected in Suffolk for over twenty years, and have shown ("Essex Naturalist," XIV, 1905, p. 61) in "The Beetles of the Eastern Counties," the total species recorded from Essex to then be 1,649; from Norfolk, 1,803; and from Suffolk, 1,900; so the supposition that it could have been overlooked is unthinkable.

That it ever occurred here is very nearly as improbable. In Ireland it appears to be nearly confined to, or at least most usually captured on, peat at considerable altitudes*; and there to be attached to a situation, such as the underside of large stones lying on the top of low turf walls of a foot or two in height; in such a place I have taken it myself on Clare Island. But in East Anglia no similar situation is to be found, and the three localities instanced are all practically on sea-level. The Burgh Marshes are about four miles inland from Yarmouth, and Belton little more than a mile to the south of them; Halvergate marshes are some three miles to the W.N.W. of these, and Bungay about a dozen miles due S.W.; but, be it noted, all are on the banks of, or connected by dykes with the same river, the Waveney, which debouches into the Yare at Burgh. Mr. E. A. Elliott and I have not infrequently collected at Bungay, Belton, and Burgh, without finding a trace of the present species anywhere in Suffolk, or in the parts of Norfolk, Essex, Cambs., Herts, Northants, or Lincs., visited at odd times.

Last autumn I made a pilgrimage to its reputed home at Halvergate. "To Marshes" says the sign-board at the cross-roads; and truly. As far as the eye can see in this direction is a flat waste, unrelieved by a single cottage or tree, stretching away to distant misty windmills in a dead level, intersected only by reed-choked dykes, connected by rough gates giving upon the cattle-marshes, and their relative lodes. In its early morning mist it still looked what it once was: a huge estuary, some ten miles north and south from Stokesby to Haddiscoe, and nine miles east and west from Yarmouth, bounded by the erstwhile Norfolk and Suffolk coasts, and here rising very slightly to Wickhampton Church jutting into the plain to the west of these marshes, but further south it runs inland to Beccles and along the river to Bungay.

* Mr. John W. Ellis, M.B., F.E.S., gives a very typical *localité* for the species ("Field Naturalist's Quarterly," 1903, p. 238) in his "Mourne Mountains and their Beetle Fauna;" he tells us that Slieve Donard, the highest of the peaks (2796 feet), "is one of the very few localities in the British Islands for that handsome ground-beetle, *Carabus clathratus*, whose violet-black body, over an inch in length, with rows of bright coppery impressions on the wing-covers, must make it a conspicuous object on its native hill-sides. The search for this insect formed the *raison d'être* of our visit to the Mourne Mountains last Easter."

Peewits, larks, and pied wagtails were everywhere. The commonest plants were stunted *Epilobium*, *Mentha*, *Galium palustre*, *Sparganium ramosum*, common dock, *Plantago lanceolata*, *Potamogeton*, *Myosotis palustris*, *Scrophularia*, a lot of (doubtless) imported creeping thistles and a few clumps of imported nettles. On these and the cattle-droppings *Scatophaga stercoraria* swarmed; and some assiduous sweeping in the dykes was productive only of such ubiquitous things as *Xantholinus linearis*, *Apion radiolus*, *Coccinella 19-punctata*, *Aphthona nonstriata*, *Telmatophilus caricis*, and *Thyamis lurida*; *Anthocoris sylvestris*, *Philænus spumarius*, *Tettigonia viridis*, and *Cicadula sexnotata*; *Phygadeuon fumator* and *Promethus sulcator*; *Limnophilus lunatus*; *Opomyza germinationis*, *Lonchoptera lacustris*, *Limnia unguicornis*, *Sciara thomæ*, *Spilogaster communis*, *Norellia spinimana*, *Elqira rufa*, and *E. lineata*; none of which, I fancy, are the associates of our *Carabus* on his Irish mountains!

It is, indeed, a dreary and desolate spot, but two feet above sea-level; a flatter and more man-forsaken one could only be found in Holland, and one less likely to be favoured by *Carabus clathratus* can nowhere be imagined, productive only of a few cattle, the windmills and its everlasting wind, now balmy and tempered by the autumn sunshine, but in winter roaring across these flats with icy vehemence.

Monk Soham House, Suffolk :

December, 1913.

A NEW SPECIES OF *HELOPHORUS*.

BY D. SHARP, M.A., F.R.S.

HELOPHORUS *YTENENSIS*, sp. n.

Minutus, convexus, niger, capite thoraceque metallicis, palpis, antennarum basi pedibusque testaceis, palporum tarsorumque articulis terminalibus apicem versus, nigricantibus; thorace fortiter granuloso, sulcis angustis; elytris sordide testaceis, vage parceque nigro-maculatis, profunde fortiterque punctato-striatis, interstitiis angustis, equalibus; alis latis sed abbreviatis. *Long.*, 2½ mm.

This species is extremely similar to *H. granularis*, but is readily distinguished from it, and from all other species of the genus yet known by the peculiar wings.

In Britain the species appears to be much less rare than *H. granularis*. I first met with it at Cairn Water, Dumfriesshire, in April, 1869, and have always considered the single example then found to be

H. granularis. The species occurs here in the old marl-pits found in the district, in several places: it has been found plentifully in the North of Ireland by Mr. Balfour Browne—who like myself did not distinguish it from *granularis*—and it has also been met with at Padstow by Mr. Lamb. I have examined the wings of many examples, and they are quite the same from all the localities.

H. granularis appears to be very rare in this country; I found it between Strood and Rainham in February, 1867, but only a single example, and Mr. Balfour Browne has found it very sparingly in Donegal, Ireland. These specimens quite agree with examples of "*H. granularis*" sent from Sweden by Professor Sahlberg.

H. ytenensis varies somewhat in size and form, but maintains the peculiar wings with remarkable pervinacity. The Irish specimens are rather larger and more robust than those found here, and the legs and palpi are a little shorter and stouter.

Brockenhurst:

April 11th, 1914.

MALTHODES CRASSICORNIS, MÄKLIN.: A NEW BRITISH BEETLE.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

Last year Mr. P. Harwood kindly gave me a specimen of supposed *Malthodes nigellus*, Kies., which he had taken in June, 1911, near Bishops Stortford, Essex. As it happened to be a male, I compared the external male organs with the excellent drawings given by Reitter in his "Fauna Germanica, Käfer," Vol. III, p. 272, and had no difficulty in identifying it as *M. crassicornis*, Mäkl. This species is very closely allied to *M. brevicollis*, Payk. (*nigellus*, Kies.), but the male has the last dorsal segment of the hind body simple, and not bifid, and the last ventral segment much longer and broader. My specimen differs from a female of *M. brevicollis*, identified by the late Herr Ganglbauer, and lent to me by Mr. Tomlin, in having the thorax distinctly less transverse and the front angles more prominent.

Bradfield:

April 9th, 1914.

ON *ANCHOMENUS ATRATUS*, PANZ., AND *A. DAHLI*, BORRE.

BY E. A. NEWBERRY.

In the year 1879, M. Preudhomme de Borre, in a valuable treatise on the *Anchomenini* (Ann. Soc. Ent. Belg. 1879, 55), defined an *Anchomenus*, as at least a good variety, under the name of var. *dahli*. This insect had been mentioned before by other authors; it is the *atratus* of Fairmaire and Laboulbène (Fn. France, i. 76) and the *pusillus* of Schaum, but this name is preoccupied in the genus and cannot stand. Modern authors consider *A. dahli* to be a good species. Reitter (Fauna Germanica, I, 141) separates the two thus:—

Thorax broader than long, strongly contracted behind; elytra somewhat short oval, flatly arched. Length 7-8 mm. (*A. niger*, Dej., *atratus*, Fairm., *pusillus*, Schaum).—Indigenous in the west and south of Europe, and probably also in West Germany, but hitherto mistaken for, or confused with, *atratus*

...*dahli*, Borre.

Thorax narrow, as long as, or a little longer than, broad, not strongly contracted behind, with the hind angles scarcely indicated; elytra long oval. Larger, more slender species, easily distinguished by its long narrow thorax. Length 8-9.5 mm. (*A. lucidus*, Fairm., *laterale*, Redt., *menetriesi*, Fald.)—In the south part of middle Europe, in salt marshes. Not yet recorded with certainty from Germany, but probably indigenous in Bavaria ...*atratus*, Duft.

I have omitted in the above table certain characters given by Reitter which are common to both species. Ganglbauer states that the short longitudinal impression near the apex of the fifth elytral stria, which is present in *atratus*, is wanting in *dahli*. I do not find this character constant, and it is probably for this reason that Reitter does not mention it. Ganglbauer and some other authors say that the elytral striae in *dahli* are stronger than those of *atratus*. Judging by a specimen of the latter sent me by Capt. Deville, which agrees well with the characters given in the above table, I find the reverse to be the case; the interstices are also more raised and the body more shining.

As regards the geographical distribution, M. de Borre attributes *A. dahli* to England and France. It is also found in Italy, and probably the *atratus* of the more northern regions should be referred to this species. *A. atratus* appears to be a Mediterranean species which has not yet been found in England, nor does it appear very probable that it will be. It occurs in the south of France, Italy, Sicily, Greece, Spain, Portugal, and Morocco (Tangier). The localities given by Fowler (Col. Brit. Vol. I, 91) must be considered as applying to *dahli*. A specimen taken in Cumberland by Mr. Day is quite typical, but the

insect which occurs on the banks of the Thames between Putney and Kew is regarded by Capt. Deville as a variety

13, Oppidans Road, N.W.:

April 9th, 1914.

SOME OBSERVATIONS ON THE SPECIFIC CHARACTERS
OF *HOMALOTA* (*BESSOBIA*) *OCCULTA*, AND *H. FUNGIVORA*, &c.

BY J. H. KEYS, F.E.S.

During October and the early part of November last, I obtained 18 male and 27 female specimens of *H. fungivora*, Th., from dead birds set as traps in a garden at Yelverton, South Devon. Two males and three females of *H. occulta*, Er., and three of each sex of *H. monticola*, Th., were also taken. In addition I possessed a few examples in my collection. With this considerable amount of material it seemed desirable to examine the species, with especial reference to the females of *occulta* and *fungivora*, as neither Fowler nor Ganglbauer describes the latter form, and the recently published synopsis of the tribe by Cameron (Trans. Ent. Soc. Lond., 1913, p. 301) also lacks details of it. However, Thomson's description is given in Mulsant and Rey's *Myrmédoniaires*, Pt. II, p. 139, namely that the 7th (*i.e.*, the 8th) dorsal segment is simple and rounded. My specimens agreed with this description, and an additional character which I discovered in the 9th segment and have recorded below seems quite confirmatory of this distinction for *fungivora*, in contrast to the emarginate 8th segment in *occulta*, female. In *occulta*, male, the formation of the posterior raised line of the 8th segment (Fig. 1) appears to me to be different in character from that of male *fungivora*, and suggests a geometrical pattern formed by two arcs of circles joined end to end. That of *fungivora* may be nearly straight across and more or less indefinitely notched in the centre, or may be varied in form as sketched below. Indeed I observed so great a variation in the configuration of these lines in the examples under notice (Figs. 2—6),—in some cases distinct clear-cut notches being present in the middle thereof,—that I suspected the possibility of another species being mixed with them. However, on extracting the genitalia (Fig. 10) of many specimens selected for their diversity in the point in question, I could detect no differences in their structure. It therefore seems that the species is variable to a very interesting degree in its secondary male characters. The genitalia of *occulta* (Fig. 9) are quite unlike those of the last

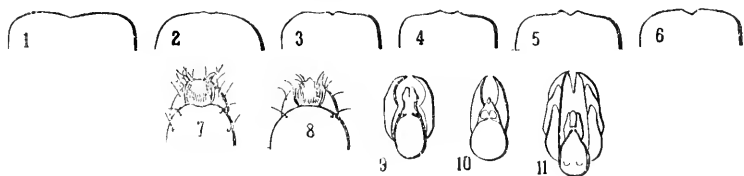
named insect; and if there still be any doubt that *H. fungivora* should rank as a species, a comparison of these organs should dispel it. Fig. 11 is a diagram of the genitalia of *H. monticola* male, a species unmistakable by reason of its distinctive secondary characters. The sketch is added merely to complete the trio. The square elytra of the females of this species enable one pretty readily to separate them from the females of *occulta* and *fungivora*, in which these organs are oblong, but, when I commenced the examination, I did not find the two latter species very easy to distinguish the one from the other. Apparently this is not an uncommon experience, as I have females of *occulta* which were sent to me some time recently as *fungivora*. The following characters may therefore be found useful for purposes of identification:—

1. Eighth dorsal segment narrowly and distinctly emarginate in middle of hind margin; ninth dorsal segment with central lobe truncate, or at most with a slight trace of a tooth (Fig. 7)*occulta*, ♀.
2. Eighth dorsal segment completely rounded or sometimes almost imperceptibly truncate in middle; ninth dorsal segment with central lobe triangularly produced in middle (Fig. 8)*fungivora*, ♀.

H. monticola, female, has the 8th segment more widely and distinctly emarginate than in *occulta*, and the lobe of the 9th produced as in *fungivora*. The males of all three species have the lobe truncate.

Comparison of length of *occulta* with *fungivora* is not a reliable character, as some of my examples of the latter were fully $3\frac{1}{2}$ mm. long.

The female genitalia of these species, or at all events, of *occulta* and *fungivora*, I found to be almost entirely membranous, and therefore unavailable for specific purposes.



Figs. 1—6 are all of the same magnification, but the side lines are abbreviated by about one-half; 7 and 8 are of equal magnification; 9, 10, and 11 are also equally magnified, but more highly than the other figures.

7, Whimble Street,

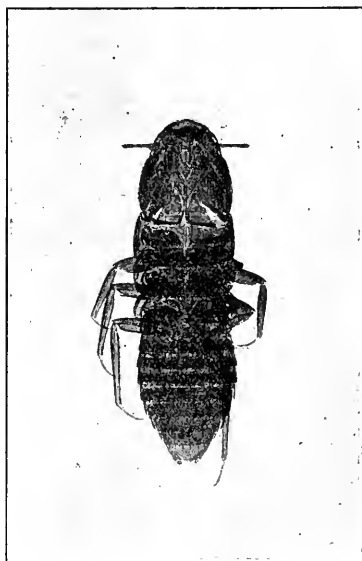
Plymouth:

February 21st, 1914.

A MELOID "TRIUNGULIN" ATTACHED TO A TELEPHORID.

BY G. C. CHAMPION, F.Z.S.

On mounting some specimens of the common North African *Rhagonycha barbara*, F., captured by myself at Carthage, Tunis, last May, a "triungulin" was found attached to the membranous space between the head and pronotum of one of them. This insect was so firmly fixed by the mandibles to the Telephorid that tweezers were required to remove it. The "triungulin" was soon afterwards placed in Canada balsam and photographed, so that certain points of structure could be properly seen. It could not be identified from Beauregard's "Les Insectes Vésicants" (in which the larval stages of various Meloid genera are figured, including one or two triungulins with a single tarsal claw), or from any other work in my possession. A copy of the photograph was therefore sent to M. P. de Peyerimhoff and Dr. Cros, resident entomologists in Algeria, who have made Coleopterous larvæ their special study, for their opinion. Dr. Cros, through M. Peyerimhoff, writes me as follows: "Your photograph represents, without doubt, the triungulin of a *Meloe*, probably of *M. tuccius* (or perhaps *M. murinus*), as shown by the form of the antennæ, feet, and claws, the channel of dehiscence visible upon the pro- and mesothorax, etc. The terminal hairs are wanting in your example (doubtless broken off in mounting), but their points of insertion, however, can be seen upon the two flattened tubercles arising from the last segment." The accompanying figure is taken from the photograph made for me by Mr. A. Cant, $\times 50$. It may be observed that the triungulin of *M. proscarabæus*, as its name implies, has three tarsal claws, whereas in the *M. tuccius*? one claw only is present. I have not come across any record as yet of a Meloid triungulin being carried by a Telephorid beetle, and the present capture is therefore worthy of note.



Horsell, Woking:
April, 1914.

COLEOPTERA IN CAMBRIDGESHIRE AND HUNTINGDONSHIRE.

BY H. FORTESCUE FRYER, F.E.S.

(Concluded from p. 88.)

TENEBRIONIDÆ.

Heledona agaricola, Hbst., and *Scaphidema metallicum*, F.—Chatteris, Holwoods. *Alphitophagus bifasciatus*, Say.—Holwoods. *Tenebrio molitor*, L.—Chatteris; *obscurus*, F., *Alphitobius piceus*, Ol., and *Hypophylus bicolor*, Ol.—Cambridge.

LAGRIIDÆ.

Lagria hirta, L.—Chatteris.

CISTELIDÆ.

Cistela ceramoides, L.*—Holwoods. *Cteniopus sulphureus*, L.—Chippenham.

MELANDRYIDÆ.

Tetratoma fungorum, F.—Chatteris, Warboys. *Orchesia micans*, Pz.—Chatteris. *Conopalpus testaceus*, Ol.*—Chatteris. *Osphyra bipunctata*, F.—Warboys.

PYTHIDÆ.

Rhinosimus viridipennis, Steph.—Chatteris; *planirostris*, F.—Chatteris, Monks Wood.

OEDEMERIDÆ.

Nacerdes melanura, L., and *Ischnomera cœrulea*, L.—Chatteris.

PYROCHROIDÆ.

Pyrochroa serraticornis, Scop.—Chatteris, Holwoods.

MORDELLIDÆ.

Mordella fasciata, F., *Mordellistena abdominalis*, F.,* and *humeralis*, L.—Warboys. *Anaspis frontalis*, L.—Chatteris, Warboys; *geoffroyi*, Müll.—Chatteris, Horseway; *ruficollis*, F.—Chatteris, Warboys, Wood Walton; *subtestacea*, Steph.—Chatteris, Wood Walton; *costæ*, Emery.—Chatteris; *maculata*, Fourc.—Chatteris, Holwoods.

ANTHICIDÆ.

Anthicus floralis, L.—Holwoods, St. Neots; *antherinus*, L.—Chatteris, Holwoods.

XYLOPHILIDÆ.

Xylophilus populneus, Pz.—Chatteris; *oculatus*, Gyll.*—Chatteris.

MELOIDÆ.

Meloe proscarabæus, L.—Holwoods.

ANTHRIBIDÆ.

Brachytarsus fasciatus, Forst.—Chatteris; *varius*, F.—Warboys.*

CURCULIONIDÆ.

Apoderus coryli, L.—Warboys *Rhynchites æquatus*, L.—Chatteris, Cambridge, Warboys; *æneovirens*, Marsh., and *cæruleus*, De G.—Warboys; *minutus*, Hbst.—Horseway, Warboys, Kimbolton. *Deporaus betulæ*, L.—Warboys. *Apion pomonæ*, F.—Doddington, Warboys; *ulicis*, Forst.—Doddington, Old Hurst: *urticarium*, Hbst.* Chatteris; *miniaturum*, Germ.—Doddington, Warboys: *cruentatum*, Walt., *hæmatodes*, L., *rubens*, Steph., and *rufirostre*, F.—Chatteris; *viciæ*, Pk.—Horseway; *difforme*, Germ., and *dissimile*, Germ.*—Chatteris; *apricans*, Hbst.—Chatteris, Warboys; *assimile*, Kirb.—Chatteris, Holwoods, Kimbolton; *trifolii*, L.—Chatteris, Melbourn, Old Hurst; *dichroum*, Bed.—generally distributed; *nigritarse*, Kirb., and *æneum*, F.—Chatteris; *radiolus*, Kirb.—Chatteris, Holwoods; *onopordi*, Kirb.—Chatteris, Old Hurst; *carduorum*, Kirb.—Chatteris, Arrington; *vicinum*, Kirb.*—Chippenham; *virens*, Hbst.—Holwoods, Aleonbury; *pisi*, F.—Fleam Dyke, Warboys; *æthiops*, Hbst.—Horseway, Kimbolton; *ononis*, Kirb.*—Chatteris Turf Fen; *erri*, Kirb.—Chatteris; *vorax*, Hbst.—Chatteris, Warboys, Doddington; *gyllenhali*, Kirb.—Melbourn; *loti*, Kirb.—Chatteris, Holwoods, Melbourn; *seniculum*, Kirb.—Chatteris, Cambridge; *violaceum*, Kirb.—Chatteris, Wood Walton; *hydrolapathi*, Kirb.—Chatteris, Kimbolton; *marchicum*, Hbst.—Holwoods; *humile*, Germ.—Chatteris, Fleam Dyke, Holwoods. *Otiorrhynchus atroapterus*, De G.*—Holwoods; *picipes*, C., and *sulcatus*, F.—Chatteris. *Strophosomus coryli*, F., *Exomias araneiformis*, Sehr.—Chatteris, Warboys. *Sciaphilus muricatus*, F.—Doddington, Warboys, Old Hurst. *Tropiphorus tomentosus*, Marsh.—Chatteris, Warboys. *Liophleus nubilus*, F.—Chatteris, Mepal. *Polydrusus pterygomalis*, Boh., and *Phyllobius oblongus*, L.—Chatteris, Warboys; *urticæ*, De G.—Chatteris; *pyri*, L.—generally distributed; *argentatus*, L.—Chatteris; *pomonæ*, Ol.—Chatteris Acre Fen; *viridicæris*, Laiel.—Holwoods, Fleam Dyke; *viridicollis*, F.—Mepal. *Barynotus obscurus*, F.—Mepal. *Sitones regensteiniensis*, Hbst.—Holwoods; *crinitus*, Hbst.—Warboys; *hispidulus*, F.—Cambridge; *humeralis*, Steph.*—Arrington; *flavescens*, Marsh.—Old Hurst; *puncticollis*, Steph.—Chatteris; *suturalis*, Steph.—Fleam Dyke, Warboys; *lineatus*, L.—Chatteris, Warboys; *sulcifrons*, Thunb.—Chatteris, Wicken, Old Hurst. *Hypera punctata*, F.—Chatteris; *rumicis*, L.—Doddington, Warboys; *polygoni*, L.—Chatteris, Doddington, Wood Walton; *suspiciosa*, Hbst.—Chatteris (old record); *variabilis*, Hbst.—Holwoods; *plantaginis*, De G.—Chatteris, Holwoods; *trilineata*, Marsh.*—Chatteris; *nigrirostris*, F.—Chatteris, Warboys. *Lixus paraplecticus*, L.—Wicken. *Orchestes quercus*, L.—Chatteris, Warboys; *alni*, L.—Chatteris, Chippenham, Warboys; *ilicis*, F.—Chatteris, Doddington, Warboys; *avellanæ*, Don.*—Doddington; *fagi*, L.—Holwoods, Cambridge; *iota*, F.—Chatteris; *stigma*, Germ.—Chatteris, Warboys; *salicis*, L.—Warboys, Wood Walton. *Orthochætes setiger*, Beck.*—Chatteris. *Grypidiusequiseti*, F.—Mepal. *Erirrhinus bimaculatus*, F.—Holwoods, Mepal (moles' nests); *acridulus*, L.—Holwoods, Mepal.

Thryogenes nereis, Pk.—Holwoods, Horseway; *scirrhosus*, Gyll.—Chatteris. *Dorytomus vorax*, F., *tortrix*, L., and *hirtipennis*, Bed.—Holwoods; *maculatus*, Marsh.—Warboys; *melanophthalmus*, Pk., and *pectoralis*, Gyll.—Wood Walton. *Tanyssphyrus lemnæ*, F.—Warboys. *Bagous alismatis*, Marsh.—Chatteris, Holwoods; *tempestivus*, Hbst., and *lutosus*, Gyll.—Chatteris. *Tychius tibialis*, Boh.—Doddington, Fleam Dyke; *pygmæus*, Bris.—Doddington, Holwoods. *Miccotrogus picrostris*, F.—Holwoods. *Gymnetron beccabungæ*, L.*—Hemingford. *Mecinus pyrastrer*, Hbst.—Chatteris, Warboys, Wood Walton. *Anthonomus ulmi*, De G., and *rosinæ*, Des Gozis.—Chatteris, St. Ives; *pomorum*, L.—Chatteris; *pedicularius*, L.—Colne Drove, Wood Walton; *rubi*, Hbst.—Chatteris, Madingley. *Nanophyes lythri*, F.—Holwoods, Wicken, Wood Walton. *Cionus scrophulariæ*, L., *hortulanus*, Marsh., and *pulchellus*, Hbst.—Warboys. *Cryptorrhynchus lopathi*, L.—Holwoods. *Acalles roboris*, Curt., and *turbatus*, Boh.—Doddington. *Caliodes rubicundus*, Hbst.—Holwoods, Warboys; *quercus*, F., and *erythroleucus*, Gmel.—Warboys; *quadrinaculatus*, L.—generally distributed; *cardui*, Hbst.—Chatteris, Warboys. *Poöphagus sisymbrii*, F.—Holwoods. *Ceuthorrhynchus assimilis*, Pk.—Holwoods, Warboys; *erysimi*, F.—Doddington, Holwoods, Warboys; *contractus*, Marsh.—Holwoods, Warboys; *quadridens*, Pk.—generally distributed; *pollinarius*, Forst., and *viduatus*, Gyll.—Chatteris Acre Fen, Holwoods; *angulosus*, Boh.—Holwoods, Mepal; *pleurostigma*, Marsh.—Chatteris Acre Fen, Holwoods; *rapæ*, Gyll.—Chatteris; *marginatus*, Pk.—Chatteris, Warboys; *rugulosus*, Hbst.—Doddington; *melanostictus*, Marsh.*—Wood Walton; *asperifoliarum*, Gyll.—Holwoods; *chrysanthemi*, Germ.*—Wood Walton; *litura*, F.—Chatteris. *Ceuthorrhynchidius floralis*, Pk.—Holwoods, Warboys; *pyrrhorhynchus*, Marsh.—Chatteris Acre Fen; *troglydites*, F.—Chatteris. *Rhinoncus gramineus*, F.—Chatteris; *perpendicularis*, Reich.—Chatteris, Mepal; *castor*, F.—Mepal, Wood Walton; *bruchoides*, Hbst.—Holwoods. *Phytobius 4-tuberculatus*, F.—Wimblington, Wood Walton; *canaliculatus*, Fahr.—Holwoods. *Limnobaris T-album*, L.—Wicken, St. Ovests. *Baris latcollis*, Marsh.*—Wicken. *Balaninus venosus*, Grav.—Doddington, Warboys; *turbatus*, Gyll.—Chatteris, Warboys; *nucum*, L., and *villosus*, F.—Warboys; *salicivorus*, Pk.—Holwoods, Mepal, Warboys. *Cossonus ferrugineus*, Clairv.—Chatteris. *Rhyncolus lignarius*, Marsh.—Holwoods. *Magdalis armigera*, Foure., and *cerasi*, L.*—Chatteris; *barbicornis*, Latr.*—Chippenham. *Scolytus destructor*, Ol., *pruni*, Ratz., *intricatus*, Ratz., and *multistriatus*, Marsh.—Chatteris. *Hylesinus fraxini*, Pz.—Chatteris. Warboys; *vittatus*, F.—Holwoods. *Myelophilus piniperda*, L.—Chippenham. *Dryocætes villosus*, F.—Warboys.

The Priory, Chatteris:

September 8th, 1913.

SYNOPSIS OF THE BRITISH FORMS OF THE *ANDRENA MINUTULA* GROUP.

BY R. C. L. PERKINS, D.Sc., M.A., F.E.S.

(Continued from p. 75).

It will never be easy for the Hymenopterist to distinguish the species of these small bees with certainty, unless he makes a special study of fairly extensive material. When the distinctions are thoroughly grasped, they are really not particularly difficult, and the difficulty is due to the variability of all, or nearly all, our species. It is this variability that makes them so difficult to tabulate, even when one can recognise the various forms with certainty and on a very brief inspection. I do not think any useful purpose would be served by giving detailed descriptions of the species, as most of the important characters are shown in the tables already published, but the following notes may be of service.

A. nana, Kirby (nec Smith, E. Saund.) = *schenkella*, Pérez. Only known to me as British by Kirby's type specimen, but it will no doubt be sooner or later found in numbers. The ♀ by its shining first and second abdominal segments, the latter very densely and distinctly punctured with the apical margin rugulose, and bearing shallow and rather large scattered punctures, is unmistakable; the ♂ has the basal abdominal segment smooth or polished between the punctures, as in *alfkenella* alone of our British species, but the latter has the apical impressions of the following segments shining and not dull from distinct surface sculpture.

A. alfkenella, sp. n. (= sp. β of my former paper). The ♂ resembles the preceding in the character above mentioned and is superficially extremely like some examples of *minutuloides*, but the latter always has the general surface of the 1st and 2nd segments rugulose. It is even more like the continental *A. niveata*, Friese (which through the kindness of Herr J. D. Alfken I have been able to examine), since that species also has the basal abdominal segments shining, but in *niveata* the ventral segments are dull and more granulate. *A. saundersella* ♂ has the basal segments rugulose. The ♀ of *alfkenella* somewhat resembles that of *spreti*, Pérez, when the latter has become abraded, but the feeble apical impressions of the 2nd and 3rd abdominal segments at once separate it. It should be said that the ♀ of *niveata*, Friese (nec E. Saund.), has no resemblance to that of *alfkenella* in spite of the similarity of the ♂. This bee appears during the first half of July, and I have only taken it on *Umbelliferæ*. It is a coastal

or heath-loving species, rather than a frequenter of meadow land or cultivated places.

A. spreta, Perez (= *niveata*, E. Saund., nec Friese) is distinguished at a glance from any of our species by the deep apical impressions of the abdominal segments with their very densely, minutely punctate or granular-like, dull surface. This is mostly a coastal or heath-loving species, but occurs in the fens also.

A. saundersella (= *nana*, Smith, Saunders) in the ♀ is distinct from all others by the deep shining impression of the third abdominal segment; that of the second is also generally much smoother than in other species. The ♂ is most like *minutuloides*, which often has a plentiful abdominal puncturation, but the clypeal hairs are of a different character, longer and less erect, giving it a quite distinct appearance. In this species the rugosities of the propodeal area are usually abbreviated, often very much so, but occasionally they reach the brow, In *minutuloides* they are still more variable.

A. moricella, sp. n.—In the ♂ of this species the face is clothed with long black or sooty hairs, as in typical *parvula*, Kirby, and I can add nothing to the characters given in the table. I have not taken examples of this species *in cop.*, and so cannot be sure that the ♀ is correctly assigned. As Herr Alfken has found a very similar ♀ in Germany, the ♂ of which is quite different from *moricella*, I have taken the ♂ as the type of my species. One of the ♀ ♀ was taken on the same patch of daisies as the ♂, no other species occurring at the time except *saundersella*. I have seen but few examples, all told, of this form.

A. subopaca, Nyl.—This is the sp. *a* of my earlier paper, and I have to thank Herr Alfken for preventing me from giving it a new name, he having been able recently to examine Nylander's type specimens. The ♂, which has a pale-haired face, could only be confounded with *minutula* or *minutuloides*, but the very feeble thoracic puncturation easily distinguishes it. The propodeal area is much more rugose than in *saundersella*. The ♀ with impunctate abdomen resembles only *minutula* and *parvula*, but the very finely remotely punctured mesonotum easily separates it. The dark appressed hairs of the 5th abdominal segment and the dark stigma are characteristic.

A. parvula, Kirby, and *minutula*, Kirby.—These are spring and summer broods of one species, the ♂ of the former being unlike any other species except *moricella*, as above noted. The ♂ of the second

brood, when freshly emerged, has the face clothed with brownish hairs, and is then easily distinguished. It is, perhaps, not always possible to distinguish between the ♀ ♀ of the two broods, but generally the mesonotal puncturation is more distinct in the summer form, and in very fresh examples that I have compared, the pubescence of the middle of the face is always longer and more plentiful in the spring brood. The ♀ ♀ of the second brood are often extremely numerous on the flowers of *Rubus*, and may occur on these quite unmixed with the following, even in localities, where both occur. On *Umbelliferæ* both are often found together.

A. minutuloides, sp. nov. All the ♂ ♂ that I have seen have the face clothed with very pale or whitish hairs. In both sexes the thorax is smoother than in *minutula*. It appears to be rather a heath-frequenting or upland species than the other, which is found in all sorts of localities. It appears to me quite possible that it is the second brood of the following. The variation in thoracic and abdominal puncturation, as well as in the sculpture of the propodeal area makes it most difficult to describe. I have taken the sexes *in cop.*

A. parvuloides, sp. nov. I have not found the sexes *in cop.*, and have taken the ♀ as the type of this form. It appears normally later than *parvula*, which it greatly resembles. It is no doubt common, but there are few specimens in the collections, I have examined. It appears to frequent the same kind of localities as the preceding. Females of these two are sometimes hardly separable.

In England, *A. spreta*, *saundersella*, and *subopaca* are very subject to the attacks of *Stylops*. *A. parvula* is, I think, very rarely affected. The others I have not found stylitized

I have to thank all those who have allowed me to examine their specimens, and especially the Rev. F. D. Morice, who lent me both his Continental and British series. From Messrs. A. H. Hamm, J. J. F. X. King, E. B. Nevinson, and Lieut.-Col. Nurse I have also had specimens for examination, and have further examined the extensive Cambridge Museum Collection, and those in Mr. Arnold's. I am still further indebted to Herr J. D. Alfken, who is working at the German species, for allowing me to send him a series of a number of our British forms and for valuable information concerning these. My friend Mr. A. Koebele sent me many fresh specimens from Baden. Though *Andrena proxima*, Kirby, is a true member of this group of bees, I have not thought it necessary to include it in my tables, its

comparatively large size and very distinctive mesonotal puncturation rendering it so distinct.

Since the above was written I have examined the series of specimens in the collection of the late F. Smith, and I find therein a single ♀ example of another species new to our list, *A. nanula*, Nyl. This specimen bears only the month and day of the month of its capture, but by comparison of the label, pin, and mode of setting, I can be practically certain that it was sent to him by Bridgman of Norwich. Probably it was taken actually at Norwich, for some other similarly pinned insects bear the letter "M" (no doubt, Mousehold) or 'Brundall' written on them. Bridgman, who many years ago wrote to me that he had great doubts of the identity of some of the species that Saunders considered as spring and summer forms of one, sent a number of these (*bimaculata*, *dorsata*, *afzeliiella*, *minutula*, &c.) to Smith in 1875-77.

A. nanula, Nyl., is one of the species that bears evident, but very fine and feeble, punctures on the abdominal segments. The mesonotum is distinctly shining between the punctures, and the apical impressions of the 2nd and 3rd segments are sculptured, not shining as in *saundersella*. It most nearly resembles *moriceella* ♀ of our British forms, but the shining mesonotum and the very conspicuous red or ferruginous colour of nearly the whole of the flagellum of the antennæ beneath, the apical joints being also ferruginous above, separate it at once. The mesonotum in the British specimen is less closely punctured than in two examples received from Herr Alfken, but the latter do not agree together in this respect. The surface of most of the basal abdominal segment is smoother than in the allied species and rather shining. I have not seen a ♂. It is a summer species found in July and August.

Park Hill House,

Paignton: March, 1914.

SOME NOTES ON *CRAMBUS LITHARGYRELLUS*, HÜBN., AND *C. POLIELLUS*, TREITSCHKE.

BY THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S.

Stainton (Manual, Vol. II, p. 184) includes *Crambus lithargyrellus*, Hübn., among the British species of *Crambi*. Subsequent authors do not appear to have considered the inclusion of this large *Crambus* in the British list to be justifiable. In the penultimate portion of the late J. W. Tutt's collection, sold at Stevens' Auction

Rooms on April 23rd, 1912, lots 257 and 258, which were put up together, contained five specimens of a *Crambus*, taken at Deal in 1889, which in my opinion belong to this species. *Crambus lithargyrellus* should therefore, I fancy, be regarded as a British insect. The five specimens referred to are now in the collection of the Natural History Museum.

The same lots contained a single specimen of *Crambus poliellus*, Treitschke, taken at Deal in 1885; so this species also has claims to be considered British. *C. poliellus*, which is essentially a sand-frequenting insect, appears on the wing at the beginning of September, and is well worth looking for. This specimen is also now in the collection of the Natural History Museum.

Arundel House,

Kensington Palace Gardens, W.:

April 7th, 1914.

NOTE ON THE GENUS *ARACHNOCORIS*, SCOTT.

BY DR. E. BERGROTH, C.M.Z.S.

Scott's description of this remarkable genus of *Nabidæ*, and of the two species known to him, is very detailed; but in considering it to be "very nearly allied to *Allæorhynchus* Fieb.," he overlooked some of its most important characters, and his account of the rostrum, etc., is inaccurate. All this has been corrected by Reuter, who, in 1890, erected a distinct subfamily for the genus. Later, after the discovery of the genus *Pararachnocoris* Reut., Reuter found that it could not be separated from the subfamily *Reduviolinæ*. The disagreement between Scott's and Reuter's description of the veins of the membrane is simply due to the fact that the venation is very inconstant in the members of this genus and cannot be relied on even as a specific character. In the British Museum I have seen Scott's type and the type of the Nabid *Velidia berytoides*, Uhl., from the island of Grenada. This latter insect is a very tiny form and distinct from the other species of *Arachnocoris* by the beautifully banded legs; but the generic characters are the same, and *Velidia*, Uhl., must be united with *Arachnocoris*. *Herdonius* (?) *panamensis*, Dist., also belongs to this genus, Distant having described a Nabid as a Capsid. In rearranging the *Nabidæ* of the

British Museum, the last-named author has tacitly placed *panamensis* under *Arachnocoris albomaculatus*, Scott, but it differs from Scott's species, apart from other characters, by the non-incrassate middle femora, which in *albomaculatus* are strongly thickened. This might, of course, be a sexual character, but as the types of *albomaculatus* and *panamensis* are both males, there can be no doubt that *panamensis* is a distinct species. Yet the true *albomaculatus* occurs also in Panama, as I have before me a specimen from Tabernilla (Canal Zone), taken by Mr. A. Busck, belonging to the Washington Museum. The following species is so distinct and easily recognised from the others that I describe it, although the type is not in the best condition.

ARACHNOCORIS TORQUATUS, n. sp.

Angustus, gracilis, nitidus, piceus, capile testaceo, macula interoculari per clypeum continuata et lineola transversa inter ocellos piceis, hemelytris dilute livido-testaceis, ad venas et illic infuscatas, fascia nonnihil ante angulum apicalem fusco-cinereum corii picea, collari prothoracis, spinula apicali scutelli, macula triangulari ad marginem apicalem corii inter fasciam anteapicalem piceam et angulum apicalem, callo parvo ad angulum basalem metapleuræ et segmentorum ventris quattuor primorum et ad marginem lateralem segmenti hujus quinti, margine acetabulorum orificiisque eburneis, limbo basali pronoti albido. Caput e latere visum collari et lobo medio pronoti unitis distincte longius, fronte pilis duobus longis tenuissimis prædita, spatio interoculari superiore oculo uno duplo et dimidio latiore, ocellis inter se et ab oculis æque longe remotis, articulo primo antennarum piceo, capiti æque longo (ceteri articuli desunt), rostro piceo, basin ventris attingente. Pronotum parce subtiliter puberulum, distincte trilobatum, lobo apicali (collari) quam medio dimidio brevior, lobo basali quam medio duplo et dimidio longiore, subtilissime et remote ruguloso, impressione inter lobos medium et basalem retrorsum parum curvata. Scutellum apice in spinam brevem semi-erectam productum. Hemelytra (♂) apicem abdominis paulum superantia. Pedes intermediarii fusco-testacei, coxis, trochanteribus, basi et annulo angusto sub-apicali femorum, apice tibiæ tarsisque piceis; femora sublinearia, haud incrassata; tarsi longi, triente tibiæ paulo longiores. (Pedum anticorum et posticorum solum coxæ piceæ restant). Long. ♂ (sine hemelytris) 3.5 mm.

Hab.: VENEZUELA, Caracas.

This species, like *A. simoni*, Bergr., was discovered by E. Simon, the well-known Arachnologist. The members of this genus are said to live in society with spiders, and they resemble somewhat in shape and colour certain narrow myrmecoid species of the Araneid family *Salticidæ*. Six species of *Arachnocoris* have now been recorded, and I have seen another from Trinidad which will be described elsewhere.

Turtola, Finland:

February, 1914.

LIST OF ODONATA COLLECTED AT TOZEUR, S. TUNISIA, BY
MR. G. C. CHAMPION IN MAY, 1913.

BY HERBERT CAMPION.

AGRIONINÆ.

Ischnura sp., 1 ♂.—Unfortunately, the anal appendages have been damaged, and the specific identification must therefore remain uncertain.

GOMPHINÆ.

Onychogomphus costæ, Selys, 1 ♂.—In this sand-coloured specimen the wing-veins are extremely pale and the body without conspicuous markings of any kind. It appears to be immature, but I think it may be referred to the present species, as the anal appendages agree fairly well with the figures accompanying the original description (the type was from Oran, in Algeria). It also agrees with the description sufficiently well in size and certain other respects.

(?) *Gomphus* sp., 1 ♀.—In the absence of the ♂ I do not care to attempt the determination of this insect.

LIBELLULINÆ.

Orthetrum anceps, Schneider, 1 ♂.—A small species belonging to the Mediterranean group, and apparently not at all common in collections.

O. chrysostigma, Burm., 1 ♀.—This species varies a good deal in size, and ranges over the whole of the African continent.

Trithemis annulata, P. de B., 2 ♂.—Occurs in the Mediterranean region, and throughout continental Africa, as well as in Madagascar.

March 23rd, 1914.

Reoccurrence of Acalyptus rufipennis, Gyll., in Oxfordshire.—On April 15th and 16th I again had the pleasure of meeting with *Acalyptus rufipennis* in the restricted locality at Weston-on-the-Green, where it occurred sparingly last year (Ent. Mo. Mag., 1913, p. 135). On the present occasion it was taken rather freely by beating the willow bushes in blossom, the female catkins being decidedly the more productive. JAMES J. WALKER, Oxford: April 20th, 1914.

Abundance of Haliplus striatus, Sharp, in Yorkshire.—On February 23rd I paid a visit to the Yorkshire side of the mouth of the Tees, the objective being *Haliplus striatus*, Sharp, which had occurred there in numbers in August, 1913. The locality is by no means an inviting one, much of the road being on the edges of gigantic slag-heaps, or by the side of the dreary waste reclaimed from the river, but not yet occupied by iron works. The insect is found in two very large pools of brackish water, flanked on one side by a slag heap, on a second by a railway, and on a third by an embankment also of slag! The weather was very cold and blusterous, and as a result the beetles were almost torpid. Consequently shelter had to be taken behind one slag "boulder," while the contents of the net were spread on the flat surface of a second. Though the *Halipli* were slow in showing themselves, they were there in enormous numbers, the net on one occasion containing 70 specimens, while a space five yards long yielded upwards of 200, and would doubtless have given more if time had permitted the search. Dips made in other parts of the ponds showed that the insect occurred everywhere, so that a very modest estimate would put the number of *Haliplus striatus* in the two ponds as half a million, and very probably it much exceeded the million.—GEO. B. WALSH, 166, Bede Burn Road, Jarrow-on-Tyne: March 14th, 1914.

Callidium (Pyrrhidium) sanguineum, L., in Essex.—In the spring of 1913 a local taxidermist sent me a match-box containing three specimens of a beetle which he said had made its appearance on his premises; he had smashed about two dozen, but as others still continued to come he was anxious to know whether they were likely to prove injurious. The species was *Callidium sanguineum*, L., and my son at once set off to investigate, and succeeded in tracing the source of the specimens to a case containing a fine wild cat, which was mounted on a piece of wood, and this showed the holes from which the beetles had emerged; one was still alive within the case, but no others appeared afterwards. The cat had been sent to be set up by Dr. J. H. Satter, of D'Arcy House, Tolleshunt D'Arcy, Witham, Essex, to whom I recently wrote for further particulars. Dr. Satter was greatly interested, and called upon me yesterday, when he informed me that he received the piece of wood, which was black poplar, with the wild cat, from Nancy. This beautiful beetle was recorded by the late S. Stevens as having been taken many years ago at Plaistow, and was probably then, as now, of Continental origin.—W. H. HARWOOD, 62, Station Road, Colchester: March 18th, 1914.

Philhydrus halophilus, Bedel, from Sussex.—Only a few weeks ago, independently of Mr. Newbery, I identified two specimens of a *Philhydrus* which I took at Newhaven, Sussex, in April, 1904, as *P. halophilus*, Bedel. I would add to Mr. Newbery's note the fact that this species differs from *P. maritimus*, Th., in having the side-borders of the elytra much narrower, and *P. halophilus* being a more convex insect they are scarcely visible from above; in both these characters it resembles *P. nigricans*, Zett. The aedeagus in *P. halophilus* differs markedly from that organ in both the above-named species.—NORMAN H. JOY, Bradfield, Berks: April 6th, 1914.

Hastula hyerana, Mill., at Reigate.—In April 1911, I collected some larvæ of *Hastula hyerana* at Hyères. These duly produced moths in the autumn of 1911. From eggs laid by these, larvæ emerged, and in the autumn of 1911 were placed on some plants of *Asphodel* that are in my garden here. In the spring of 1912 I collected larvæ from these plants, which duly produced moths and eggs, and the resulting larvæ were placed on the plants in the autumn of 1912. Last spring (1913) I observed larvæ on the plants, but partly from being from home, and in some degree from forgetfulness, I simply left them on the plants, and concluded that the experiment was ended. It seems, however, that this was not so, since I now (April, 1914) find larvæ on the plants. The 1913 larvæ (those turned out newly hatched, August or September, 1912) must therefore have succeeded in æstivating, in emerging as moths and in laying eggs in August or September (or later) in 1913, with the larvæ found now as the result.

It would thus appear that *H. hyerana* has lived at Reigate in the open-air without any attention, from September, 1912, till April, 1914, more than a full generation, with every prospect of completing the second full cycle.—T. A. CHAPMAN, Betula, Reigate: April, 1914.

"A humble-bee attacked by a Dipteron."—The occurrence recorded under the above heading by Mr. Richardson in the "Entomologist's Monthly Magazine" for last month, p. 93, is easily explained. What was taken for "a medium-sized black humble-bee" was really the female of *Podalirius pilipes*, Fab., one of the *Apidæ*; and the supposed Dipteron hovering over it and vibrating its wings in a state of great excitement was clearly the male of the same species! These two insects differ so widely in appearance that they may easily be mistaken for different species, but the black pubescence of the one and the golden-brown appearance of the other, and their method of courtship are conclusive. The only other insect they could possibly have been is *Podalirius retusus*, Linn. These two species are superficially very much alike, but the latter is later in its appearance and more local, whereas the former appears everywhere with the first sunny days of March and remains on the wing for a long time, though its rich golden-brown pubescence rapidly becomes griseous in brilliant weather.—W. H. HARWOOD: April 1st, 1914.

Apparatus designed for setting small insects.—A useful piece of apparatus has recently been made to my design by Mr. O. E. Janson, and as it is we both think the most practical and convenient apparatus at present designed for setting small insects, I think the description will be of interest to you. It consists of the head-band as used by medical men to hold the mirror with which they examine throats, &c., but the mirror removed, and in place of it a metal rod of measured length with a ball at one end to fit into the socket of the head-band, while the other end consists of a clip to hold lenses of various powers. In this way a lens of suitable strength is held in comfort at a convenient distance from the eye, moveable with the head of the user, so that it can be

used sideways, in a manner not tiring to the eyebrow like the old watchmaker's glass, nor requiring the same degree of bend in the neck when in use, and capable of being used for either eye or swung out of the way as required. In this manner ease and comfort are secured, while both hands are left free for the use of the setting needles, and the insect can be viewed sideways and moved about at will (a great advantage over the various forms of stand apparatus). The structure, though sounding complicated in description, is in reality simplicity itself, and renders the setting of small insects much less of a strain than heretofore.—F. THOMPSON, M.R.C.S., L.R.C.P., River Bank, Sunbury-on-Thames: *March 10th*, 1914.

Wel seasons and Acarid parasites on insects.—While collecting *Diptera* among grass-roots, dead leaves, &c., last January, I found some *Borboridæ* infested with a reddish-coloured Acarid. In one case there were four of these parasites on the abdomen of *Borborus nitidus* in a space of hardly more than one millimetre. At first sight I thought I had a red-bodied specimen. The weather was frosty at the time. I have not noticed them on other *Diptera*.—HERBERT BURY, High Lane, Cheshire: *April 4th*, 1914.

Evidence of memory and reasoning in a Pompilid.—This afternoon I observed a Pompilid (*Salix wakefieldi*, or an allied species) running backwards along a concrete path hauling a large spider which she had evidently stung. The path had a border about three inches high covered with short confused grass stems. Inside this was an area of recently disturbed earth, many of the clods being half an inch in diameter, the whole thus forming very "rough country" from the Pompilid's point of view. After dragging the spider about ten feet, the Pompilid left it on the path, ascended the grass edge and explored the rough earth for a space of four feet parallel to the path, her nest evidently being at the foot of a post amongst some long grass beyond the rough earth. The Pompilid returned after about one minute and made for the spider, which she had some little difficulty in finding. It was clear that the disturbed state of the ground perplexed the insect as she was evidently finding her way by looking at surrounding objects, and many of these had been disturbed within half an hour of the observation. When the Pompilid found the spider she pulled it along the smooth path to the nearest point opposite her nest instead of along the rough route she had just explored. She then again left the spider, this time for fully three minutes, in order to discover the best route through the tangled grass stems. The spider was finally hauled off the path into the long grass and the insect's subsequent operations could not be followed.

This observation seems worth recording as it proves the existence of memory, a strong continuity of purpose, and an ability to first ascertain and subsequently make use of the easiest path for hauling a heavy load.—G. V. HUDSON, Hillview, Karori, Wellington, New Zealand: *March 8th*, 1914.

Obituary.

Petr Petrovich Semenoff-Tian-Shansky, father of our Honorary Fellow, A. P. Semenoff-Tian-Shansky, President of the Russian Entomological Society, died of pneumonia at his residence in St. Petersburg, after a very short illness, in his 88th year.

Although not an active entomologist, he formed a very fine collection of Palearctic *Coleoptera*, and by his sympathy and powerful influence did much to forward the study of insects in Russia.

His contributions to the literature of botany, geology, statistics, art, and above all, geography, were as numerous as valuable; to the latter science, indeed, they were vast. He first earned fame by his explorations in 1856 and 1857 of the then mysterious mountains of Central Asia, the Altai and Tian-Shan, whence the honorable distinctive addition to his family name. He was intimately associated with the Imperial Russian Geographical Society for over half a century, being Vice-President since 1873: he was awarded the gold Founder's Medal of our Royal Geographical Society in 1897, and in 1910 the Gesellschaft für Erdkunde of Berlin granted him the Ritter-Medal specially struck in gold. His orders and distinctions were very numerous, among the most prized being the German Emperor's order, "pour le mérite."

He was Director of the Central Statistical Committee from 1864 to 1880, President of the Permanent International Statistical Commission since 1872, Senator since 1887, and Member of the Council of State since 1897.

In spite of his great age, he was working with his accustomed energy and optimism up to three days before his death.—M. B.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: Thursday, March 12th, 1914.—Mr. B. H. SMITH, B.A., F.E.S., President, in the Chair.

Mr. J. C. Fryer, Northumberland Avenue, was elected a Member.

Mr. W. J. Kaye exhibited two quite distinct species of *Heliconius*, *H. hydara* and *H. amaryllis*, var. *euryades* of almost exactly the same facies, with microscopic slides of the genitalia. Mr. Newman, *Lasiocampa ilicifolia*, ♀, taken at Cannock Chase, May 25th, 1913, by Mr. G. B. Oliver. Mr. Tonge, nest of the N. American hornet, *Vespa maculata*, from Massachusetts, with several imagines. Mr. Step, photographs of *Aleurodes* (*Aleyrodidae*), a family allied to the *Coccidae*, and gave notes on the habits of the insects. The rest of the exhibits were microscopical. Dr. Chapman, the androconia of *Agriades thersites*, spring brood larger, much like those of *P. escheri*, summer brood, much like those of *P. icarus*. Mr. West, imagines of *Aleurodes* (*Aleyrodidae*). Mr. Adkin, armatures of *Ptycholoma lecheana*, cocoon structure of *Anthrocera filipendulae* and *Saturnia pavonia*. Mr. C. B. Williams, British species of the Order *Protura*. Mr. Coxhead, galls, with larvæ and pupæ, of *Cecidomyia saliciperda*. Mr. Ashdown, various species of *Coleoptera* and *Hemiptera*, including *Hispa atra*, larva of *Jalla dumosa*, etc., with Swiss specimens of *Ceuthorrhynchus horridus*. Mr. Noad Clark, androconial scales of *P. brassicae*.

March 26th, 1914.—The President in the Chair.

Mr. Edwards exhibited a large African Scarabæid *Archon centaurus*, found dead at Blackheath, and also a number of *Lepidoptera* from Burmah, including *Chalcusia venosa* and *C. zetica*. Mr. Tonge, a long series of *Colias edusa* taken near Reigate in 1877-8, the years of great abundance. Mr. H. J. Turner, *C. edusa* from Dawlish, etc., including ♀ var. *helice* and bred examples of intermediate coloration. Mr. A. E. Gibbs, *C. edusa* with local forms from many European localities, with allied species from the Eastern Palearctic area and from the Nearctic region. Mr. B. Adkin, a large number of *C. edusa*, including many specimens of intermediate coloration. Mr. Joy, a very long series of bred specimens of *C. edusa*, all of large size, many ♀s with small or no spots in the marginal bands. Mr. Dunster, *C. edusa* taken along the south coast of England during the past three years. Mr. Frohawk, very long series of *C. edusa* and ♀ v. *helice*, showing almost complete gradation in ground from pure white to rich orange, including the rare shades of lemon colour, and aberrations with black suffusion to the discoidal (fore-wing), with black hindwings, with drab marginal borders, and a ♀ measuring 67 mm. Mr. R. Adkin, a long series of British *C. edusa*, and read a paper entitled "*Colias edusa* in Britain" dealing in turn with Nomenclature, History in Britain, the Theory of its Occurrence, Probable Lines of Migration and Immigration, Local Habits, Variation and Aberration, Reasons of Irregular Abundance beyond the confines of its area of Natural Distribution, etc. A considerable discussion took place. —H. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, February 4th, 1914.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Miss Maude Lina West Cleghorn, 57, Ballygunge Circular Road, Calcutta, and Mr. William John Fordham, M.R.C.S., L.R.C.P., The Villa, Bubwith, Selby, Yorks, were elected Fellows of the Society.

The President announced that he had nominated Dr. H. Eltringham, the Hon. N. Charles Rothschild, and the Rev. G. Wheeler as Vice-Presidents for the present Session.

Mr. B. H. Smith exhibited specimens of *Prodenia littoralis* bred from larvæ found feeding on bananas at Weymouth. Mr. C. B. Williams, a specimen of the genus *Acerentomon* of the Order *Protura* taken from moss in the New Forest, Hampshire. He also drew the attention of the Society to the new Order *Zoraptera* just described by Silvestri, the first discoverer of the *Protura*. Mr. Donisthorpe, specimens of the ants *Ecophylla smaragdina* F., from Ceylon, and *O. virescens*, F., from North Queensland. These ants use their larvæ to spin threads and fasten the leaves of their nests together. Prof. Poulton, a pair of *Neophasia terlooiti*, from Arizona; also a collection of Algerian *Diptera* and other insects associated with them, made by Dr. Adalbert Seitz, F.E.S.

The following papers were read: "On the egg-laying of *Trichiosoma*," by

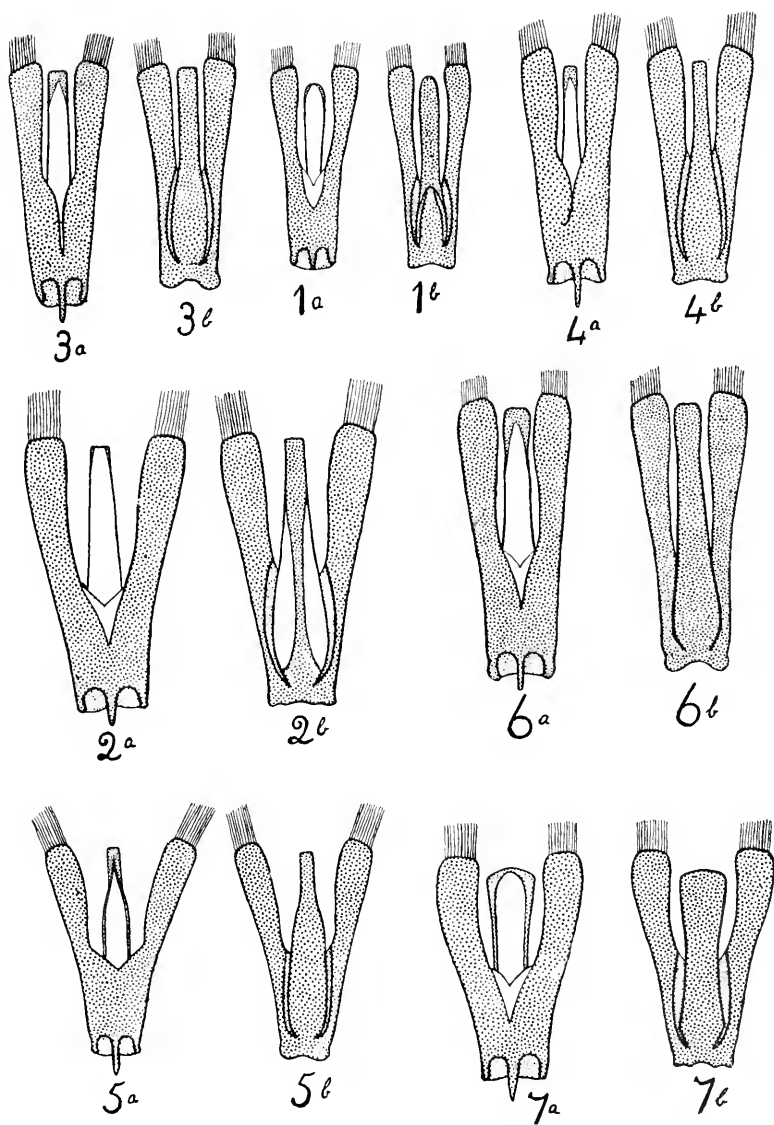
T. A. Chapman, M.D., F.Z.S., F.E.S. "A remarkable new Genus and Species of *Odonata* of the Legion *Podagrion*, Sel., from N. Queensland," by Kenneth J. Morton, F.E.S. "*Lepidoptera-Heterocera* from S.E. Brazil," by E. Dukinfield-Jones, F.Z.S., F.E.S. "The Myrmecophilous *Aphides* of Britain," by Prof. F. V. Theobald, M.A., F.E.S.

Wednesday, March 4th, 1914.—The President in the Chair.

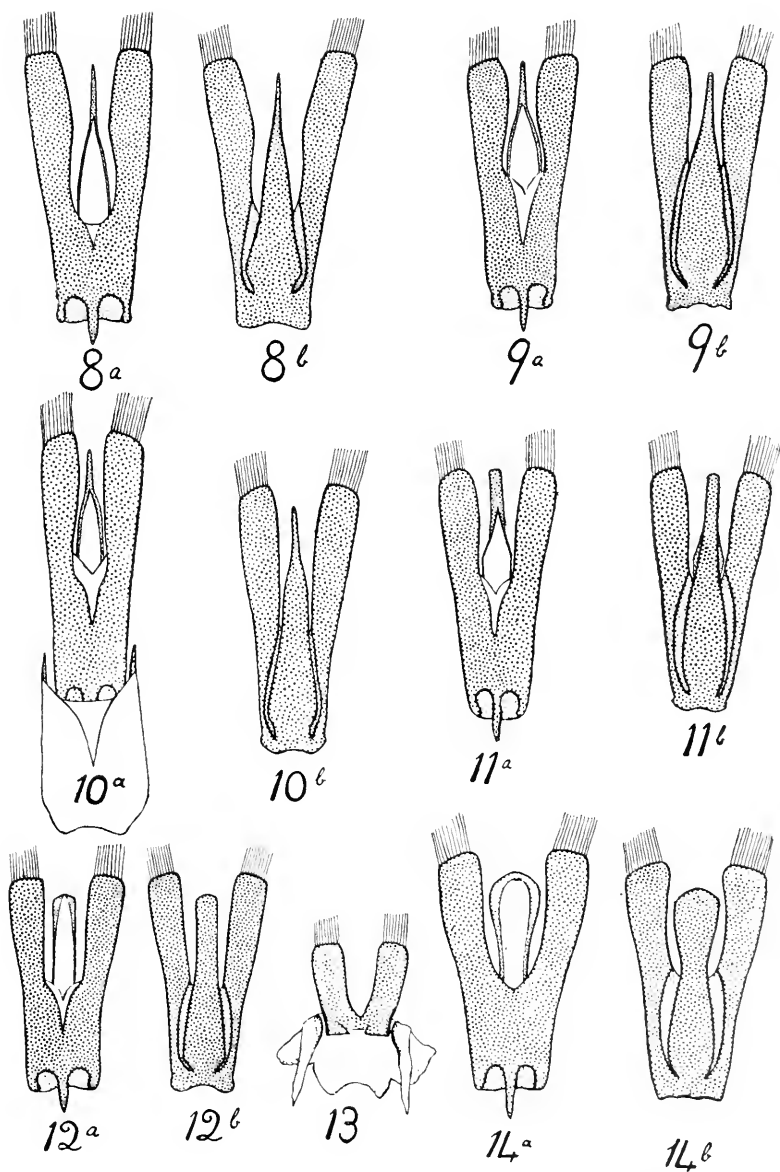
Messrs. Wm. J. von Monté Pendlebury, Broadlands, Shrewsbury, and Keble College, Oxford; Robert Veitch, 7, Queen's Crescent, Edinburgh; and Francis Cardew Woodforde, B.A., Market Drayton, Salop, were elected Fellows of the Society.

Mr. H. Donisthorpe and Mr. W. C. Crawley exhibited a number of polymorphic forms in ants, illustrated by a chart, and read notes. Dr. T. A. Chapman, a ♂ and ♀ imago of *Agriades thersites*, alive, bred from the egg; also two last-stage larvæ. Mr. H. Main, a gynandromorphic specimen of *Eriogaster lanestris*, right side ♀, left side ♂, bred last year at Eastbourne by Mr. E. P. Sharp. Mr. O. E. Janson, a specimen which he believed to be the female of *Goliathus wisei*, Heath, hitherto unknown, also specimens of *G. kirki*, Gray, in which the white markings were very perfectly preserved. Mr. Champion, on behalf of Mr. E. W. Morse, of Leeds, the second British specimen of the genus *Eudectus*, probably a variety of *E. whitei*, Sharp, from Ingleborough, Yorks., and a pair of *Ædemera virescens*, L., from Symonds Yat, Hereford. Dr. F. A. Dixey, at the desire of Mr. J. C. Hawkshaw, F.E.S., a cocoon of *Lyonetia clerckella*, L., spun up on a cherry leaf. Mr. Hawkshaw suggested that the fine silken web attached to the leaf on each side of the supporting strands and guy lines by means of which the cocoon is slung up like a hammock, served as a protection against ants. Mr. E. Ernest Green, a Coccid with double anterior limb, and read notes. Mr. L. W. Newman, a fine ♀ *Lasiocampa ilicifolia* taken on the wing at Cannock Chase, by Mr. G. B. Oliver, on May 25th, 1913. Mr. Newman stated that the larvæ in captivity took readily to aspen. Mr. A. W. Mera, two specimens of *Ciduria suffumata*, of an unusual form, from East Devon, received from Rev. J. W. Metcalfe, who takes this form from damp woods, and finds it not entirely confined to one wood. Prof. Poulton stated that he had just received from Mr. E. E. Platt, of Durban, the male and female parents—both of the *wahlbergi* form—caught in *coitu*, with their large family of about 200 *mima* and *wahlbergi* in about equal numbers. These results were quite unexpected.

The following paper was read: "A Revision of the Central American *Chauliognathinæ* (Fam. *Telephoridæ*), based on the Genital Armature of the Males," by G. C. Champion, A.L.S., F.Z.S., F.E.S.—GEO. WHEELER, *Hon. Sec.*



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Editorial.

As the "Entomologist's Monthly Magazine" has now completed the fiftieth year of its existence—the first number having been published on June 1st, 1864—a brief retrospect of its history during this period will doubtless be welcomed by our contributors and readers.

In the early "sixties" of the last century, a great deal of encouragement and assistance was afforded to incipient Entomologists by several of the leading exponents of our Science in London, prominent among these being Mr. J. W. Douglas and Mr. H. T. Stainton. The latter gentleman was for many years in the habit of throwing open his valuable and extensive library (which included the fine series of Entomological works amassed by James Francis Stephens), and his equally valuable collections, on one evening in the week to all comers interested in insects, besides personally conducting afternoon excursions in the summer months in the then productive neighbourhood of his residence at Lewisham. This good example was followed by other well-known Entomologists in the provinces, and as an immediate result of this activity, the need of a periodical entirely devoted to the subject was greatly felt at this time. The "Entomologist" initiated by Edward Newman in 1840, was in 1843 merged into the "Zoologist," a monthly magazine of general Natural History, which still continues to hold a high place among journals of that kind; and it was not resumed as a separate publication until more than twenty years later. The "Entomologist's Weekly Intelligencer," conducted by H. T. Stainton, after several years of very useful and highly appreciated existence, came to a close in 1862; and the "Weekly Entomologist" a subsequent periodical on somewhat similar lines, edited by Thomas Blackburn and published at Altrincham, Cheshire, had but a brief career. The "Journal of Entomology," a well illustrated but somewhat expensive magazine dealing almost entirely with exotic insects, was published at irregular intervals between 1860 and 1866, and valuable notes on Entomological subjects continued to appear in the "Zoologist," but the space available therein for records of this nature was obviously inadequate.

Our magazine was initiated under the joint direction of five of the most distinguished Entomological workers of the day:—Messrs. H. T. Stainton, R. McLachlan, E. C. Rye, T. Blackburn, and Dr. H. Guard Knaggs. In the first number commenced a series of exceedingly important papers on new Central American butterflies by the famous naturalist Henry Walter Bates, who was for many years a

contributor to our pages, for the most part on the subject of exotic *Coleoptera*; and in our own fauna in this Order, E. C. Rye began a series of equally valuable notes with the first part of his revision of our species of *Stenus*. As announced in the preface to the first volume, the Magazine, while by no means neglecting Exotic Entomology, was to be largely devoted to that of the British Islands, and papers and records of our *Coleoptera* have throughout held, and continue to occupy, a prominent place in its pages. As regards the other "favourite" Order, the *Lepidoptera*, we have had of recent years to regret a marked falling-off in the number of contributions, though occasional valuable notes continue to appear, and we trust that in the future these will be more numerous. The careful and detailed descriptions of the larvæ of many of our *Lepidoptera*, by W. Buckler and the Rev. J. Hellins, are an important feature of our earlier volumes. In addition to many contributions by our successive Editors, the work of a large number of our best known Entomologists had found a place in our pages, as well as that of several distinguished foreign workers, among whom may be named Achille Guenée, C. Bergroth, O. M. Reuter, Baron von Osten-Sacken, and others.

Of the contributors to our first volume, eight well-known Entomologists, some of them in the front rank of our workers, are happily still with us:—A. G. Butler, F. Enoch, C. Fenn, Geo. Lewis, G. B. Longstaff, G. F. Mathew, D. Sharp, and C. O. Waterhouse. The veteran Dr. Sharp, from whose pen an important paper appears in the present issue, indeed narrowly missed being a contributor to our very first number, as his note published on p. 48 was announced on its wrapper as having been received.

The Rev. T. Blackburn resigned his position on the staff of our Magazine in May, 1866, on his leaving England, and Dr. H. Guard Knaggs, who resigned in 1874, was succeeded by Mr. J. W. Douglas. Messrs. C. G. Barrett and Edward Saunders joined our staff in June, 1880, and the vacancy caused by the premature and tragic death of our esteemed first editor for *Coleoptera*, Mr. E. C. Rye, was filled after an interval of a year by the Rev. W. W. Fowler; this department being strengthened by the accession of Mr. G. C. Champion in January, 1891. The Magazine sustained a very heavy loss in December, 1892, in the death of its practical founder Mr. H. T. Stainton, whose place on the staff was filled by Lord Walsingham until December, 1912; Mr. R. McLachlan, who from the first had taken a prominent part in its management, became Editor-in-Chief until his lamented decease in

May, 1904; during his long illness the Magazine was conducted by Mr. E. Saunders, and his vacancy was occupied by Commander J. J. Walker, R.N. The memories of C. G. Barrett (died December, 1904), and of Edward Saunders (died February, 1910), are still fresh and honoured with us; and we enjoy the assistance of their successors Messrs. G. T. Porritt (February, 1905), J. E. Collin (March, 1906), and R. W. Lloyd (March, 1909). We owe the series of nine coloured plates in illustration of British and Exotic Insects, which have been a feature of our recent volumes, to the munificence of one of the present Editors.

It is with great pleasure that we are enabled to present the readers of the current number of the "Entomologist's Monthly Magazine" with the portraits of the eight deceased Founders and Editors. The originals of five of these portraits have been kindly supplied by Mrs. E. Saunders, Messrs. C. G. Barrett, jun., W. L. Distant, H. McLachlan, and C. O. Waterhouse.

It is obviously impossible in this place to do more than allude to the extensive scope of the work embodied in the pages of our fifty volumes; but the following statistics of the additions to the fauna of our Islands will at any rate serve to show that the design of the Magazine as a record of British Entomology, as indicated by our original Editors in the preface to Vol. I, has been fully carried out.

ADDITIONS TO THE BRITISH INSECT FAUNA RECORDED IN THE ENTOMOLOGIST'S MONTHLY MAGAZINE, JUNE, 1864—MAY, 1914.:—

COLEOPTERA	...	...	...	...	601	species.
DIPTERA	...	...	...	...	1121	"
EUPLEXOPTERA	...	...	...	...	3	"
HEMIPTERA	...	...	...	...	166	"
HOMOPTERA	...	...	...	...	317	"
HYMENOPTERA	...	...	...	...	446	"
LEPIDOPTERA	...	...	...	...	218	"
NEUROPTERA (<i>sensu Linneano</i>)	...	...	...	...	79	"
ORTHOPTERA	...	...	...	...	3	"
SIPHONAPTERA	...	...	...	...	11	"
THYSANOPTERA	...	...	...	...	27	"
TOTAL					2992	species.

And of 1369 species of *Coleoptera* described during this period as new to Science, 132 were found for the first time in the British

Islands. The very large number of *Diptera* have mainly been added by the late Mr. G. H. Verrall (who has more than once brought forward 100 additional species at a time), and by his nephew, Mr. J. E. Collin, who as one of our Editors continues Mr. Verrall's work; a very considerable number have also been added by Dr. J. H. Wood, of Tarrington, Herefordshire.

The form of the Magazine remains practically unchanged from the first, and will be continued in the forthcoming nominal THIRD SERIES commencing with the next volume; and it is, perhaps, needless to state that the spirit of the passage from Laboulbène, happily selected as our motto by our first Editors, has throughout been rigidly adhered to. A word of acknowledgment is due to our printer, Mr. Alexander Napier, for the care and accuracy with which the production of the Magazine has been carried out since he succeeded in 1897 to the business of his late father, whose high standard of printing work has been fully maintained by the son.

The writers of the Preface to our Second Series were able to congratulate themselves on the existence of an Entomological Journal "conducted on non-commercial principles" for more than twenty-five years. A period of equal duration has elapsed since this was written, and their present-day representatives trust that the Entomologist's Monthly Magazine will continue to receive and to deserve the support and appreciation which has been extended to the "labour of love" of the succession of Editors for the past half-century.

THE BRITISH SPECIES OF *GYRINUS*.

BY D. SHARP, M.A., F.R.S.

(PLATES IX AND X.)

In this Magazine, July, 1868, there was published a brief article by me on the British *Gyrinidæ*. Since then several important works on the family have appeared, of which it is here only necessary to mention the following, viz.:—(1) Régimbart's "Monograph of the *Gyrinidæ*," 1883, with Supplements, 1886, 1891 and 1907; (2) Vol. I of Fowler's "British *Coleoptera*" (1887); (3) a valuable though brief paper by Edwards in the "Entomologist," 1890; (4) Vol. I of Ganglbauer's "Käfer," etc. (1892); and (5) Reitter's "Fauna Germanica," Vol. I (1908).

Edwards' brief paper was specially valuable, as he introduced the study of the ædeagus. It has, however, remained unknown to the

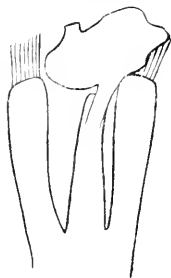
writers who have followed him. Ganglbauer's work on this family is much below the level of most of the other parts of his very valuable work, and a similar remark applies to Régimbart's study of the genus *Gyrinus*. In fact, the subject has advanced but little in the last 50 years. I hope in this paper to carry it a little farther, but only a little, and unless more rapid progress be made it will be some generations before a satisfactory knowledge of the British *Gyrinidæ* is attained. I hope, however, by following Mr. Edwards' lead, and making a thorough study of the genitalia, we shall get a real advance, and it is with that idea this paper has been drawn up and illustrated.

The ædeagus is, however, only very imperfectly understood. The lateral lobes when present in *Coleoptera* usually exhibit marked distinctions between the species. But in *Gyrinus*, though they are very large, they yet are almost identical in all our British species. Moreover, the styli of the female resemble them in form, and are highly peculiar. This leads me to suggest that their phallic function is subordinate to some bodily (or as Muir and I have termed it chröotic) purpose. This, however, is one of the many points that will have to be settled later on.

Another distinctive character of the Gyrinid ædeagus, but one that is probably of much less importance, is the relation of the lateral lobes to the basal plate and to the median lobe. The lateral and median lobes are very intimately connected, while the basal plate is only attached to the lateral lobes by means of a very large connecting membrane that allows the large basal plate to slide over and encase both the median and the lateral lobes. Hence the tegmen (= basal plate + lateral lobes) is peculiar.

These facts, taken with the extreme adaptation of the chröotic structures, emphasise the great isolation of the family *Gyrinidæ* in the Order *Coleoptera*.

There appears to be no differentiated sac in *Gyrinus*, and I cannot say what extension of duct there may be to accomplish fertilisation. In *Dytiscus*, Hans Blunck (Zeitschr. wiss. Zool. cii, 1912) has shown in a very valuable memoir that the process of fecundation is accomplished by means of a curious spermatophore formed during the copula. So far as I know no information exists as to the copula of *Gyrinus*. But I have a remarkable specimen of *G. urinator* that is about 60 years old, and that exhibits a short portion of duct extended with a peculiar body attached to it. I have thought it



worth while to give a figure of this as it appears after the ædeagus has been mounted in balsam. Whether the ill-shaped body is or is not the remains of a spermatophore I am quite unable to say.

Although no information exists as to the copula of *Gyrinus*, we owe to Régimbart (Ann. Soc. ent. France, 1883, p. 383) a brief but most interesting account of the phenomenon in *Orectochilus*; and from his description it is very probable that the object shown in the above figure is part of what he calls a "cylindre spermatique."*

The species of this genus are liable to a peculiar form of variation, the chitin of the upper surface—more especially of the elytra—becoming more or less dull, instead of highly polished; and this dullness is sometimes accompanied by the development of an excessively minute and indefinite sculpture. As sculpture is of considerable importance in discriminating the species of the genus it is desirable the student should be prepared to recognise this adventitious roughening of the surface when he meets with it. I have seen it in *G. natator* (where with a concomitant change of colour it forms the var. *corpulentus*, Schatzm.), in *colymbus*, *bicolor*, *elongatus*, *marinus*, and *minutus*, and it probably occurs in the other species if larger series of them were accessible.

The following table may help in the difficult task of distinguishing the species, but the study of the ædeagus is essential for certainty:—

- | | | | |
|----|------|------------------------------------------------------------------|------------------------|
| 1 | (4) | Scutellum with a small elevation at base | 1, <i>minutus</i> . |
| 2 |) | Scutellum without elevation. | |
| 3 |) | Under surface entirely yellow | 2, <i>urinator</i> . |
| 4 |) | Under surface more or less extensively black. | |
| 5 | (10) | Inflexed margin of elytra largely or entirely yellow. | |
| 6 | (7) | Surface of elytra with a distinct sculpture of scratches... | 8, <i>striolatus</i> . |
| 7 | (6) | Surface of elytra without sculpture of scratches. | |
| 8 | (9) | Three or four sutural series of punctures <i>very</i> fine | 3, <i>natator</i> . |
| 9 | (8) | Three or four sutural series of punctures distinct or fine. | |
| 10 | (13) | Sides of elytra strongly rounded. | |
| 11 | (12) | Elytra with a minute punctuation..... | 7, <i>colymbus</i> . |
| 12 | (11) | Elytra without minute punctuation | 4, <i>suffriani</i> . |
| 13 | (10) | Sides of elytra slightly rounded or straight. | |
| 14 | (15) | External apical angle of elytra evident though obtuse... | 5, <i>elongatus</i> . |

* I may here take the opportunity of saying that from observations I have made during the last two years I have formed the opinion that the lateral lobes of the male ædeagus during copula never enter the tube of the female.

- 15 (14) External apical angle of elytra quite rounded6, *bicolor*.
 16 (5) Inflexed margin of elytra metallic.
 17 (18) Claws of middle and hind tarsi yellow9, *opacus*.
 18 (17) Claws of middle and hind tarsi black.
 19 (20) Size larger, ♂ 6, ♀ 7 mm. long10, *marinus*.
 20 (19) Size smaller, ♂ 5, ♀ 6 mm. long11, *edwardsi*.

1. *G. MINUTUS*, Fabr.

This species has been made the exponent of a subgenus *Gyrinulus* on account of the elevation on the scutellum. This character readily distinguishes the insect from all our other *Gyrini*. The pronotum of *G. minutus* is remarkably dull, but there is a fine shining line along the middle, and the scutellar elevation looks like a prolongation of this line. The ædeagus (figs. 1) differs but little from that of *G. natator*, but there is not so much chitination of the tip of the ventral surface of the median lobe.

The species is a local one, but occurs throughout Great Britain and Ireland, as I am informed by Mr. Balfour Browne.

2. *G. URINATOR*, Illig.

This species is distinguished by the under surface being entirely yellow or red, and by the very smooth upper surface, the serial punctures near the suture being effaced and, as it were, covered by a substance that forms lines of coppery effulgence. The ædeagus (figs. 2) is very like that of *G. natator*, but the median lobe is gradually and regularly narrowed from its broadest point near the base of the bulb, to the tip which is truncate: there is no chitination of the ventral face at the extremity.

3. *G. NATATOR*, L.

This, the most ubiquitous of our species of *Gyrinus*, may be recognised by its bright parti-coloured under surface, its broad definitely oval form, and the great delicacy of the series of punctures on the elytra near the scutellum, the oblique double series of punctures at the apex of each elytron is always moderate—never much obliterated, never very coarse and deep. Some of the individuals of *G. elongatus* approach it very closely, but in no case is that species so broadly oval, the elytra in it being always straighter at the sides, with the outer apical angle less deflexed and obliterated.

As regards variation; in this country the specimens invariably have the mesosternum and the last ventral segment bright red. It is said

that on the Continent these parts are sometimes dark (var. *marginatus*), but I suspect this to be erroneous, as to which see my remark under *G. suffriani*. In length it varies from 5 to over 7 mm., and there is a corresponding difference in width from $2\frac{3}{8}$ to $3\frac{3}{8}$ mm. There is some difference in the distinctness of the serial punctures near the scutellum; and the individuals in which these punctures are most distinct correspond, I believe, to the "var. *mergus*" of the older authors.

A really marked variation occurs in colour. Usually the upper surface has metallic reflections, the scutellum being brassy or golden, and the raised suture of the elytra behind it having a similar reflection, but in a few individuals the colour of the upper surface, including the scutellum and suture, is totally black. This variation occurs in its most marked form only in the less punctate individuals, and these were considered a distinct species by Suffrian and were treated by him as the true *nator*. In some of the black examples, a very fine strigation of the surface can be detected, and these are no doubt the var. *corpulentus*, Schatzmayr (Wien. ent. Zeit. xxii, p. 172). Intermediate examples occur, and Suffrian subsequently changed his view, and united all as one species. The extreme black form may be known as var. *B*, or as var. *corpulentus*, Schatzm. Although the pronounced black coloration occurs only in the *nator* (or slightly punctate form) yet there are individuals of the *mergus* form that approximate this coloration.

As regards "*mergus*" I find it impossible to reconcile the statements of various authors, and there would be no practical result from fully setting out the contradictions. But one point must be alluded to as a name has been recently reinstated as that of a distinct species. Régimbart in 1883 described a *G. wankowiczi* as distinct from *nator*; in 1887 Seidlitz distinguished (or supposed he did) *mergus* from *nator*, and suggested that *wankowiczi*, Rég., was this *mergus*. In 1891 Régimbart formally adopted this view, and thus *mergus* now appears as a distinct species. I doubt both the distinctness and the applicability of the name, and also that *wankowiczi* = *mergus*, Seidl.; but in the absence of Ahrens' type the question is not likely to be settled, and Suffrian gave us to understand in 1842 (Stettin. ent. Zeit., p. 235) that Ahrens' specimens were lost. Suffrian was in communication with Ahrens, and it would appear that they really relied on the black colour as the distinguishing feature of *nator*. The remarks I made in 1868 as to the characters of "*mergus*" and "*nator*," as well as to their local variation, were based on an imperfect knowledge, and are to a large extent erroneous.

As regards the ædeagus (figs. 3) its study in this species is rendered somewhat difficult by its frequent immaturity, which not only gives rise to some shrivelling in dried specimens, but also renders it difficult to discriminate the chitinated from the membranous parts of the tube, a difficulty which is increased by the fact that there is but little difference in the coloration of the membrane and the chitin, the latter never becoming very dark in *G. natator*. The median lobe has the bulbous basal part rather narrow, and the apical or rod-like half rather broad, and departing but little from being parallel-sided. The chitination of the ventral aspect is considerable at the tip, so that the median orifice cannot extend to the extremity, but there is no elevation of the hard parts that limit the orifice.

G. NATATOR var. n. OBLITUS.

G. natatoris proxime affinis, sed minor, elytrorum sculptura minus obsoleta, interstitiis internis versus apicem subconvexis. Long. $5\frac{1}{2}$ mm.

Two specimens, approaching so closely to *natator* that their distinctness may be doubted, though on comparison with a series of 200 examples I find no others like them. One has been in my collection, as a variety of *G. suffriani*, for many years. The other is the specimen the ædeagus of which was figured as that of *G. natator* (Sharp and Muir, Tr. Ent. Soc. London, 1912, pl. xlix, fig. 42). This var. must be very near to *wankowiczi*, Rég.

The ædeagus (figs. 4) is within what I have treated as the limits of variation of *natator*; the median lobe is slightly narrower and its outline slightly more sinuous.

The type specimen was found in the River Ouse at Stony Stratford in September, 1868. The other example I have lost the locality of; its sculpture, and its form even, differ a little from the other. Mr. Edwards has an intermediate specimen.

4. G. SUFFRIANI.

(?) *G. suffriani*, Scriba, Stettin. ent. Zeit., 1855, p. 280.

The individuals of this species are as a rule smaller than *natator*, but in this respect the two overlap. Although large *suffriani* are extremely similar to small *natator*, yet the two are easily enough distinguished: the punctures of the inner striæ at the base are more distinct than in *natator*, and the underside is much darker in colour; the inflexed margins of the elytra, the mesosternum, and even the last ventral segment are never bright red. Variations in sculpture occur that may give rise to some confusion, but when the striæ of punctures at the base of the

elytra are unusually delicate in *suffriani*, then the punctuation at the apex is so much effaced that there should be no confusion with *natator*.

The ædeagus of *suffriani* (figs. 5) differs markedly from that of *natator*: the chitination of the tip of the ventral surface of the median lobe extends further forwards, and the sides of the median orifice are raised, and these raised margins meet in the middle behind, so that the median orifice is definitely limited and the whole apical portion is strongly chitinated.

5. *G. ELONGATUS* Aubé, Edw., Régimbart.

G. distinctus Sharp, Ent. Mo. Mag., v, 1868, p. 57.

Closely allied to *G. natator*, but different in shape, the insect being much narrower, and the sides of the elytra less rounded. The species is variable, but the variation is very different from that of *natator*, as it chiefly involves the shape, and not the sculpture and colour. Some of the specimens are so straight-sided and elongate that I formerly thought they connected this species with *bicolor*. This doubt I now know to have been unfounded. *G. bicolor* has the apex of the elytra more completely rounded and a very different median lobe of the ædeagus. As regards the change of name, I should remark that the confusion as to *elongatus*, Aubé, and *distinctus* has been very great, and I adopt the name *elongatus* on the authority of Régimbart, who tells us that *distinctus* always has a fine punctuation of the interstices of the elytra, whereas in our British specimens there is no such punctuation (cf. Ann. Soc. ent. France, lx, 1891, p. 676). Moreover I sent a specimen of our "*distinctus*" to Régimbart, who returned it to me as being *elongatus*, Aubé.

I cannot discriminate two species among our *elongatus*, though the narrow specimens are I presume "*var. angustatus*, Aubé."

I find no clear distinction given by Régimbart, in his succession of notices, of *distinctus* from *elongatus* beyond the minute punctuation of the former I have mentioned above. But there exists in the Edwards collection a male of *elongatus* having the elytra dull, and with an effaced minute sculpture; the serial punctuation of the elytra is unusually fine, and the outer apical angle perhaps less rounded. I consider this analogous with *var. β* of *natator*; and the ædeagus is the same as in ordinary *elongatus*. Still it is possible that Régimbart's *distinctus* may be something of this sort.

The ædeagus of this species (figs. 6) is very similar to that of

natator, and still more to that of *oblitus*. Indeed I do not perceive any distinction in the ædeagus of several species of the genus that I can rely on as satisfactory evidence of specific distinction.

6. *G. BICOLOR* Payk.

This species is not difficult to distinguish on account of its very elongate form, and the strongly rounded apices of the elytra. Schiödte's *G. celox* is referred to in the catalogues and books as a synonym of *bicolor*, but the form of the apices of the elytra in his beautiful figure shows that it refers to *G. elongatus* var. *angustatus*, and this was Schiödte's own opinion. The ædeagus (figs. 9) is very different from that of *G. elongatus*. The figure given of the median lobe of *G. bicolor* by Mr. Edwards shows an unnatural amount of constriction in the middle.

7. *G. COLYMBUS* Fr.

G. caspius Sharp, Ent. Mo. Mag., v, 1868, p. 57.

This species is intermediate in shape between *natator* and *elongatus*, and this is the best character for its recognition. There is an extremely fine diffuse punctuation on the elytra, but this is so difficult to study that it is better to rely on the shape for distinctive purposes. The ædeagus (figs. 7) is very distinct, on account of the very broad, blunt median lobe, which, however, in immature specimens may shrivel so as to become constricted at the base (figs. 14).

Gyrinus caspius of Aubé is said by Régimbart to be a mixture of *distinctus* and *elongatus*.

8. *G. STRIOLATUS* Fowler.

G. colymbus Sharp, Ent. Mo. Mag., v, 1868, p. 58.

G. distinctus var. *strigulosus* Rég., Ann. Soc. ent France 1891, p. 677 (*teste* Fauvel, Rev. Ent. Franc., xiv, p. 92).

A broad, robust species, almost equalling *natator* in these respects, but distinguished from it and all others by the dense distinct sculpture of the surface of the elytra. This sculpture consists of short, fine, oblique scratches, and can be perceived with a comparatively low magnification. It is similar in the two sexes, and exists on the pronotum in a somewhat modified form. Female *G. marinus* makes some approximation by its sculpture. The ædeagus (figs. 8) is like that of *marinus* and *bicolor*, but the terminal sharp part is very remarkable.

9. *G. OPACUS* Sahlb., *nec* auctt.

G. opacus var., Sharp, Ent. Mo. Mag., v, 1868, p. 59.

This species can only be confounded with the most dull varieties of *marinus* and *opacus*, but it is more dull than any of them, and when examined with a power of about 60 magn. it is seen that the dullness arises from the surface being very finely alutaceous. The species is also in remarkable contrast to the two for which it has been mistaken, by having the claws of the middle and hind tarsi pale yellow, although the apex of the tarsus is piceous. I do not know the female. The male has the front tarsi broadly dilated, and the ædeagus (figs. 12) is different from that of any other, being perhaps most like that of *G. colymbus*. This species is an addition to the British Catalogue; it is not the *opacus* of our collections. Suffrian 70 years ago misinterpreted Sahlberg's description, and he has been followed by others until his error was detected by Seidlitz in 1887, and by Régimbart in 1891. The *G. opacus* of our British collections is the species which I shall here characterise as *edwardsi*; the dull variety of *opacus* from Invercannich, mentioned by me in 1868 as "very curious" is, however, the real *opacus*.

As the descriptions and remarks of Seidlitz and Régimbart contain no reference to the two most important characters of *opacus*, (viz., the structure of the ædeagus and the colour of the claws), I addressed myself to my old friend, Dr. J. Sahlberg, of Helsingfors, and he has been so good as to send me two of the original types from his grandfather's collection, and a small series of more recently collected examples from various parts of Scandinavia, and showing that our Scottish mountain *Gyrinus* is really the same species as the Scandinavian one. I am also indebted to Dr. Sahlberg for informing me that Count Mannerheim pointed out Suffrian's error in 1847 (Stettin. ent. Zeit., p. 209), a fact with which I was previously unacquainted. This was 67 years ago, and yet in the latest European Catalogue, "*opacus*, Sahlb.," is placed as a variety of *marinus*, Gyll., no doubt as a result of the belief that "*opacus*, Suffr.," is the same species as that of Sahlberg.

The species has hitherto only been found in Scandinavia and Iceland; to which we may now add Scotland. I found it at Invercannich in July, 1866, at Braemar in June, 1871, and again in June, 1909. It is no doubt a boreal form, and comparatively solitary in habits. My specimens were found, I believe, at a considerable elevation in company with *G. minutus*. After *G. minutus* it is the most distinct and isolated of our British *Gyrini*. *G. opacus* thus occurs from arctic Norway and Lapland southwards to the Highlands of Scotland, and its occurrence in the latter country is a matter of considerable interest. Dr. Sahlberg

informs me that it inhabits rocky pools in company with *Deronectes griseostriatus*, and this quite agrees with my recollection of the spot where I found *G. opacus* at Braemar.

10. *G. MARINUS* Gyll.

In this species there is a marked distinction between the sexes in the sculpture of the elytra. Before attempting to study this insect it is therefore desirable to separate the sexes. The male is smaller than the female, often not more than half the size; it is more shining, and when examined with a magnifying power of about 60, is seen to have on the elytra a very fine, scanty general punctuation; in the female this punctuation is vastly more dense and distinct, and some of the punctures are a little extended so as to become very short scratches; hence the comparatively greater dullness of this sex. There is a little variation in the sculpture, but not much, and this common species can always be identified by the male aedeagus, which has invariably a long, slender, pointed extremity (figs. 10), and the female sexual sculpture.

11. *G. EDWARDSI*, nom. nov.

G. opacus Suffrian, Sharp, Edwards et auctt. plur., nec Sahlberg.

In this species the individuals are smaller than in *marinus*; but as in both the male is considerably smaller than the female, it is necessary to separate the sexes before comparing the two insects.

In the male of *edwardsi* the aedeagus (figs. 11) has the apical part parallel-sided, and though slender, always truncate at the extremity: and when carefully compared it is found that the shape is in other respects different in the two species, and there is no doubt as to the distinction of the two.

The female of *edwardsi* is smaller than that of *marinus* and is a little different in shape; it also has the serial punctures of the elytra smaller; but these differences are only slight, and one meets with specimens of this sex as to which I find it impossible to decide with full confidence. Fig. 13 represents the styles of this sex.

This is the *opacus* of our collections in Britain. The species has been believed by modern European authors to be the same as *marinus*, and it has altogether disappeared from the European catalogue. There is no doubt, however, as to its complete distinction from *marinus*, although the two are frequently found in intimate association, and although on cursory examination there appear to be numerous "intermediates." This has been stated by Friederichs in Allg. Zeitschr. Ent., viii, p. 260, who is inclined to speak contemptuously of those who

consider the two species distinct. Herr Friederichs was, however, not acquainted with the fact that Edwards had established the distinction so far back as the year 1890. This species is at present without a name, it having been, as previously stated, erroneously identified 70 years ago by Suffrian as the *opacus* of Sahlberg. I am, therefore, very pleased to connect it with the name of Mr. Jas. Edwards, to whom is due its first certain discrimination. Suffrian's characters for distinguishing *marinus* and "*opacus* (Stettin. ent. Zeit., 1842 and 1846) were correct so far as they went, but did not go far enough.

EXPLANATION OF PLATES IX, X.

Both the dorsal and ventral aspects of the ædeagus are figured: the ventral is marked *a*, the dorsal aspect *b*. The chitinous portions are shown by the aid of dots, the parts left undotted are membranous. It will be noticed that no orifice is shewn, but the manner in which the duct is extruded is shown in the illustration accompanying the second page of this paper.

The figures have been drawn with the camera lucida by my daughter, Margaret Annie Sharp, and she has taken much pains to delineate correctly the amount of chitination at the sides and tip of the ventral aspect of the median lobe. This character is of great interest and importance because on it depend ultimately the modifications in form of the median lobe. It is the most difficult point in this study, because the limits of the chitination are only indefinite when the example is immature. Potash should be used with great caution in making the preparation, as it is liable to cause shrivelling and distortion.

Figs. 1.—*G. minutus*; *a* ventral, *b* dorsal.

„ 2.— „ *urinator*; *a* „ *b* „

„ 3.— „ *natator*; *a* „ *b* „

„ 4.— „ „ var *oblitus*; *a* ventral, *b* dorsal.

„ 5.— „ *suffriani*; *a* ventral, *b* dorsal.

„ 6.— „ *elongatus*; *a* „ *b* „

„ 7.— „ *colymbus*; *a* „ *b* „

„ 8.— „ *striolatus*; *a* „ *b* „

„ 9.— „ *bicolor*; *a* „ *b* „

„ 10.— „ *marinus*; *a* ventral with basal piece; *b* dorsal.

„ 11.— „ *edwardsi*; *a* „ *b* dorsal.

„ 12.— „ *opacus*; *a* „ *b* „

„ 13.— „ *edwardsi*, female styles.

„ 14.— „ *colymbus*, male, shrivelled specimen for comparison with figs. 7; *a* ventral, *b* dorsal.

Brokenhurst:

February 23rd, 1914.



THOMAS BLACKBURN,*
June, 1864—May, 1866.



HENRY GUARD KNAGGS,*
June, 1864—May, 1874.



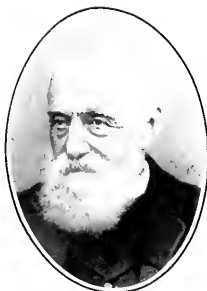
ROBERT McLACHLAN,*
June, 1864—May, 1904.



EDWARD CALDWELL RYE,*
June, 1864—May, 1884.



HENRY TIBBATS STAINTON,*
June, 1864—Dec., 1892.



JOHN WILLIAM DOUGLAS,
June, 1871—Sept., 1905.



CHARLES GOLDING BARRETT,
June, 1880—Dec., 1904.



EDWARD SAUNDERS,
June, 1880—Feb., 1910.

PAST EDITORS OF THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

* FOUNDERS.

PHILHYDRUS HALOPHILUS, BEDEL :
SUPPLEMENTARY AND CORRECTIVE NOTE.

BY E. A. NEWBERRY.

Since bringing forward the above species in the April number, I have seen specimens from Deal. I find that the character given in my table to separate *P. halophilus*, Bedel, from *P. bicolor*, Fab., depending on the form of the transverse furrow on the head, is of no value, since it is not constant, the furrow being often as angular as in *bicolor*. Nor is the character of the alutination at the base of the head of the absolute value I ascribed to it, as it is present in *bicolor* behind the eyes when the head is protruded, but is much less extensive than in *halophilus*.

Bedel (Faune Seine, I, 310) separates the two species thus:—

Head testaceous, often with a small dark spot in middle ...*bicolor*, Fab.

Head black at least up to anterior margin of eyes ...*halophilus*, Bedel.

Ganglbauer (Käfer von Mitteleuropa, IV, 247) treats *halophilus* as a synonym of *bicolor*, but states that it differs in its darker upper-side; the forehead more extensively black, or entirely so as far as the clypeal suture; the thorax usually with the disc extensively dark; the elytra reddish-brown or brown, lighter at the sides; femora black with reddish apex; tibiae brown-red, often blackish at base; tarsi rust-red. He adds that it does not appear to him to differ specifically from *bicolor*.

Reitter (Fauna Germ., II, 363) gives *halophilus* as one of the numerous synonyms of *bicolor*, giving no separating characters.

With the exception of two evidently immature examples from Deal which are entirely testaceous, all the specimens of *halophilus* I have seen are at once distinguished from *bicolor* by the shining head, with sharply defined triangular yellow spots in front of eyes. I think Capt. Deville is justified in considering it a good species.

13, Oppidans Road, N.W. :

May 11th, 1914.

ON THE VARIATION IN BRITAIN OF *COCCINELLA*
HIEROGLYPHICA, L., WITH SOME COLLATERAL MATTER.

BY JAMES EDWARDS, F.E.S.

From a consideration of the various kinds of elytral pattern now to be found in *C. hieroglyphica*, I conclude that at some period of its existence the species had red elytra with a scutellar spot, shaped like an inverted spear-head, and five others, namely : a linear one from the

middle of the base (1); a roundish one near the basal third of the outer margin (2); one in the form of a very short transverse line on the disk twice as far from the outer margin as from the suture (3); a roundish one near the apical third of the outer margin (4); and a roundish one opposite to 3 and midway between the latter and the apex (5); as given in fig. *a*. No form possessing at the same time all these separate spots has been recorded, but they are all obviously present in a state of conjunction in what is regarded by Ganglbauer and others as the type form.

As the simple and convenient numerical system used on the Continent for referring to the elytral spots in Coccinellidæ has not hitherto found its way into the English literature, I state it here. Only the left elytron is considered; the scutellar spot is $\frac{1}{2}$, and the others are numbered from left to right in transverse series from the base to the apex; conjunction is expressed by the sign +. Weise (Best. Tab. II., Coccinellidæ, Ed. 2, p. 4, 1835) lays down six cases in which a variety must have a separate name; but the giving or withholding of a name in any particular instance is rather a matter to be determined by considerations of convenience.

Commencing with those showing the least amount of black on the elytra, the named forms found in Britain are as follows:—

brunnea, Weise, without black spots. Not uncommon.

tripunctata, B. G. Rye, in which the black spots present are $\frac{1}{2}$, 5. Dorset, Chitty, teste Rye.

A form having $\frac{1}{2}$, 1 (reduced to a point), 3 (normal), of which there is a specimen from Leith Hill, Surrey, in coll. Champion, might be distinguished as *5-punctata*.

curva, Weise, $\frac{1}{2}$, 1 + 3. Dallington Forest, Sussex, E. A. Butler; Carlisle, Tomlin.

lineolata, Marsh., $\frac{1}{2}$, 1, 3, 5. This is *septempunctata*, B. G. Rye, and is not uncommon.

sinuosa, Marsh., $\frac{1}{2}$, 1 + 3, 5, (fig. *b*). This is the same as *4-fasciata*, Weise, and *bracchiata*, Gradl., and is the prevalent form in this country. Spot 2 is sometimes present.

cervicornu, Gradler, $\frac{1}{2}$, 1 + 3, 2 + 1, 5. Woking, Leith Hill, Champion.

sinuata, Naezen, $\frac{1}{2}$, 1 + 3 + 5, 4 (fig. *c*.) Ballycastle, Tomlin. This form was known to Marsham.

flexuosa, Fab., 1 + 3 + $\frac{1}{2}$, 5. Scotland, Chitty, teste Rye; Braemar, Donisthorpe.

schneideri, Gradl., $1 + 3 + \frac{1}{2}$, $2 + 1$, $4 + 5$ (fig. *d*). A specimen from Fleet, Hants, in coll. E. A. Butler. This constitutes a very near approach to the type form,

hieroglyphica, L. (*hastata*, Ol.). $1 + 3 + \frac{1}{2}$, $2 + 1$, $3 + 5 + 4$ (fig. *e*). This, the prevalent form on the Continent, is decidedly rare in British collections; I have only seen it from Leith Hill in coll. Champion.

Specimens which exceed the type form in the amount of black pigment developed, form a gradual series to those entirely black, as exemplified by specimens from Leith Hill in coll. Champion; but those which appear at first sight entirely black are much more frequent than those which are unmistakably spotted with red. Of the series in question, the first is *marginemaculata*, Brahm, in which each elytron has five spots, namely: an elongate-triangular one at the shoulder (1); a curved oblong one near the middle of the base (2); another just behind the middle of, and sometimes reaching, the outer margin (3); a small sub-oval one near the suture just behind the middle (4); and an elongate-triangular one at the apex (5); as in fig. *f*. *Bistri- verrucata*, Haw., is the name applied to the form with the red spots 1, 3, 5, only; but Haworth's description does not appear to me entirely applicable; *luctuosa*, Weise, has spots 3, 5; *fuliginosa*, Weise, 3 only; and *areata*, Panz., has the elytra entirely black above, or with the outer margin narrowly pale. So far as British specimens are concerned Weise's remark (t.c. p. 32) that the black forms are generally larger, broader, and flatter than the pale ones, only applies to the females; the males are just as narrow and convex as those of the pale form. In Coleopt. Brit. Isl. III, p. 164, the opinion is expressed that *A. obliterata* var. *fenestrata*, Weise, is occasionally mistaken for the black form of *C. hieroglyphica*. I learn from Mr. E. A. Waterhouse that the Rev. Hamlet Clark's specimens are certainly *hieroglyphica*; Mr. Donisthorpe, moreover, is of opinion that the specimen called *fenestrata* in the Power Collection is *hieroglyphica*, and there is therefore strong reason to believe that all the specimens mentioned by British writers under the name of *A. obliterata* var. *fenestrata*, Weise, really belong to one or other of the black forms of *C. hieroglyphica*.

According to my present experience, *sinuosa*, Marsh., is by far the commonest form in Britain; *luctuosa*, Weise, and its cognate forms are not uncommon, whilst the others, with the exception of *lineolata*, Marsh., are of only occasional occurrence in collections; but it is quite likely that this statement would be found inapplicable if this heath-

loving species were systematically collected throughout its range in this country.

I am not aware that any extensive study of the variation in the British Coccinellidæ has been published in recent years; in some quarters the subject is regarded as too trivial, but there can be little doubt that the various kinds of colour-pattern are of importance to the organism, and the history of the various species can hardly be adequately treated unless this matter be taken into account. It may be worth while here to record my experience that, in the case of variable species, specimens found *in cop.* are very seldom both alike in elytral pattern.

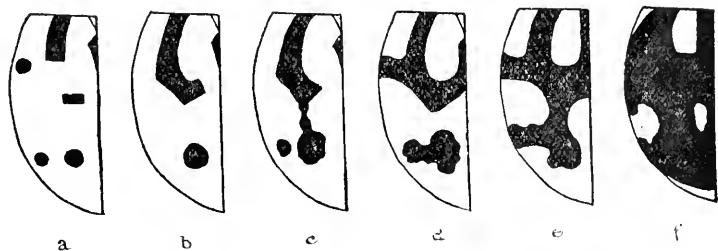
A. H. Haworth in a paper read before the Entomological Society of London in November, 1807, and published in the first volume of the Transactions of that body in 1812 (pp. 257–296), gives a good account of the kinds known to him. This paper, possibly owing to its scarcity, has not received the attention which it deserves; Mulsant (*Sulcicolles-Securipalpes*, 1846) quotes it, but only from Stephens (*Syst. Cat. Brit. Ins.*, 1829) and not at first hand; Weise (*l. c.*) quotes Haworth as the author of the name *bistriverrucata*, but he does not seem to have been aware that many of his own names fall as synonyms to those of Haworth, e.g., *C. 7-punctata*, var. *5-notata*, Haw. = *externepunctata*, Weise; *C. 10-punctata*, var. *bina*, Haw. = *loricata*, Weise; var. *terna*, Haw. = *trigemina*, Weise; *C. 11-punctata*, var. *confluens*, Haw. = *longula*, Weise, and so on. In the Transactions of the Leicester Literary and Philosophical Society, Vol. III, pp. 477–482, 1895, B. G. Rye has some “Notes on the varieties of the British Coccinellidæ” in which he gives names to many forms, but the majority of these names fall as synonyms. He says that *Adalia hyperborea* had been recently discovered at Reading by Dr. Andrews, but I learn on inquiry that this gentleman is now satisfied that the specimen in question is *C. 10-punctata*. Stephens’ example of *hyperborea* came from Scotland. Rye’s paper is accompanied by a capital plate, and his figures 9 and 10 represent two remarkable forms of *C. 10-punctata* which do not exactly fit any description with which I am acquainted; the former, which he calls var. *intermediata* (*sic*), has the spots 1 + 3 + 6, 3 + 4, 2, 5; the latter, to which he gives no name, has 4 + 4 forming a circular spot on the middle of the suture, 3 + 6 + 6 + 3 the transverse band formed by 6 + 6 connected with the central spot along the suture, 1, 2, 5.

At a meeting of the Entomological Society of London on April 5th,

1882, the Rev. H. S. Gorham exhibited a *Coccinella* from Coleford, Gloucestershire, which, being marked with four ocellated spots only, was almost certainly the var. *biocellata*, Gebl., of *Anatis ocellata*. Mr. Gorham, however, considered that it was intermediate between the latter and *Mysia oblongo-guttata*, but he did not believe it to be a hybrid. The report of this meeting goes on to say that several members remarked on the really small amount of variation to be found in this group, although commonly believed to be variable; and Mr. C. O. Waterhouse said that only two British species could be said to vary to any appreciable extent, namely *C. variabilis* and *C. bipunctata*. We now know that species possessing a stable pattern are the exception rather than the rule, and it seems doubtful whether, notwithstanding the opinions just quoted, the insects in question were really less variable in 1882 than they are at the present time.

In Coleopt. Brit. Isl. VI, p. 106, the name *C. 11-punctata* var. *confluens*, Donisth., is retained on the ground that it is recognised in the last European Catalogue; but there are at least three reasons why the name in question is untenable: (a) the name *confluens* is pre-occupied for a variety of the same species by Haworth, 1812; (b) the insect has a prior name, e.g., *brevifasciata*, Weise; (c) the publication of the name was unaccompanied by a description of the insect. Some specimens of *C. 11-punctata* from Renvyle, Co. Galway, given to me by the late Canon Cruttwell, belong to var. *nigrofasciata*, Rossi ($2 + 3 + \frac{1}{2}$, $4 + 5$).

Anyone who wishes to know what varieties of our Coccine have been characterised must consult Mulsant (*op. cit.*); he with the matter very thoroughly, but uses distinctive letters in place of names, and therefore, to those who find that the latter are more readily memorized than the former, his work is less useful than it otherwise would have been.



Colesborne, Cheltenham:

March 3rd, 1914.

ANDRENA MIXTA, SCHENCK: A SPECIES HITHERTO UNRECORDED
FROM BRITAIN.

BY R. C. L. PERKINS, D.Sc., M.A., F.E.S.

Some time since I forwarded to Herr Alfken authentic British examples of the species, which I described at first under the name of *A. ambigua* (*præocc.*) and have since re-named *A. synadelpha*. Subsequently he wrote to me that the specimen, sent to him by Edward Saunders as *ambigua*, was not that species, but a closely allied form, *A. mixta*, Schenck. As I had long been aware that we had an unrecorded British species of the *helvola* group, which I had taken on Shotover Common, near Oxford,* many years ago, I wrote to Mr. Hugh Scott of Cambridge for the loan of some of the Oxford examples of the *helvola* group contained in my old collection. As I had surmised, the form, which at the time of capture I had supposed to be a distinct species, proved to be typical *mixta*. The Rev. F. D. Morice sent me a very fresh ♀ captured last year in his garden at Woking for inspection, and there are two or three females, without special locality, mixed with *helvola* in F. Smith's collection. The ♂, so far as I am aware, is not at present known. If any entomologists have taken *mixta* ♀ freely, I should be very pleased if they would allow me to examine any ♂ taken in the same locality. So far as the species, which have some superficial resemblance to one another, are concerned, the British forms of the *helvola* group may be readily distinguished as follows:—

♀ ♀.

- 1 (4) Hairs of the hind coxæ, and the floccus of the trochanters more or less sordid, not clear white.
- 2 (3) 1st and 2nd abdominal segments densely hairy and copiously or closely punctured; abdomen duller *varians*, Rossi.
- 3 (2) 1st and 2nd abdominal segments with long but not dense clothing, the punctures sparse or remote, the surface of the abdomen less dull *lapponica*, Zett.
- 4 (1) Hairs of hind coxæ and the floccus snow-white or nearly so.
- 5 (6) Abdomen thinly and for the most part inconspicuously pubescent, with the long pale hairs on the 1st and basal part of the second segment not dense.

(Clypeus for the most part distinctly, closely, and nearly evenly punctate on each side of the middle line)...

- 6 (5) Abdomen densely pubescent.

fucata, Sm.

* Two days after the above was written, I received a very fresh ♀ taken this year at Oxford by Mr. A. H. Haum on April 16th, an early date for the species.

- 7 (8) Scopæ pale above, yellow or brownish yellow.
 (Clypeus irregularly punctured; apical impressions of 3rd and 4th abdominal segments distinct, normal)...*helvola*, Linn.
- 8 (7) Scopæ black or dark blackish fuscous above.
- 9 (10) Face largely clothed with pale whitish or white hairs, the clypeus on either side of the smooth median line somewhat evenly punctured, much as in *varians*; apical impressions of the 3rd and 4th abdominal segments in some aspects very distinct, and not or hardly obliterated even in the middle, not abnormally wide (*vere* long)*mixta*, Sch.
- 10 (9) Face sometimes almost entirely or altogether clothed with black hairs, below the antennæ often with sordid fuscous hairs; puncturation of clypeus sparser and more irregular; apical impressions of the 3rd and 4th segments much effaced or indistinct medially, and abnormally wide (*vere* long) occupying by far the greater part of the segments, even when these are not at all retracted.....*synadelpha*, P.
 (*ambigua*, P.).

The ♂ of *mixta*, as stated above, is not known to me, while in this sex the others are so easily separated that it is unnecessary to tabulate them here. I am greatly indebted to Herr Alfken for calling my attention to the existence of *A. mixta* in England.

Park Hill House,
 Paignton:
 May 10th, 1914.

HELP-NOTES TOWARDS THE DETERMINATION OF BRI *TENTHREDINIDÆ*, &c. (32—*Continued*.).

BY THE REV. F. D. MORICE, M.A., F.E.S.

(*Concluded from page 52.*)

Pictura similar to that of *Tenthredopsis* certainly gives useful specific characters in other genera, though, like all colour-characters, it seems to vary occasionally in individual specimens of the same species. Probably we may assume, though we cannot actually prove it, that the same is the case here: and in that case, we have in it a great number of definite and easily observed characters—for distinguishing varieties at least, and probably species. Forms in which it is reduced to a minimum, appearing practically only on the face and scutellum, can be separated easily and with some confidence from forms where it is copious on all parts of the head and thorax. With

somewhat less confidence we can treat as probably distinct (*a*) forms with black tegulæ, or sterna, or pleuræ, etc.; and (*b*) forms where the parts in question are white or brightly yellow. Even in cases where we feel instinctively that a character *must* be somewhat variable (*e.g.*, the appearance of *pictura* in the shape of two small flecks on the mesonotum, or of a yellow margin at the apex of the propodeum), its *presence* will often suggest to us a possible determination of the specimen under examination, though we should be cautious in drawing inferences from its *absence*. Personally, though I cannot think it proved, I think it more than probable that some, if not all, of these characters are of real "specific" value; and that, at any rate, we have at present no other characters at once as easy and as likely to be reliable, as the presence or absence of *pictura albida vel flava* in particular portions of the integument.

Characters which are apparently fairly constant, but exceedingly "critical," and liable to be seen by the inexperienced where they are really non-existent, have been pointed out in the comparative turgidity of the *tempora* ("Head narrowed or otherwise behind the eyes"); the exact dimensions and sculpture of the *vertical area*, the comparative lengths of *calcaria* and *metatarsi*, etc., etc. Observations of such characters made in haste, or in poor light, or without care to "pose" the objects to be compared in the proper situation, are worse than useless. And I have learned absolutely to distrust measurements of such small objects made by the eye simply. If they have to be made, they should be made with a proper micrometer, and at such magnification that if the object is not exactly level, it cannot be sufficiently in focus to be measurable at all!

May I venture to ask that anyone using my Tables shall take not too literally every such unqualified expression as: *entire, simple, interstitial, immaculate, equal, all over*, etc., etc.? Allowance must be made for the impossibility of making general statements without a certain amount of inexactitude, and also for the fact that probably no "character" is altogether invariable.

I have only to add, before commencing my Tabulation that, after correspondence with Dr. Enslin on the subject, I am now convinced that the black-faced *Tenthredopsis* with white-ringed antennæ, which Cameron identified with *gynandromorpha*, Rudow—a very mysterious "species," and probably not a *Tenthredopsis* at all—may safely be struck out of our List. It is doubtless *T. andréi*, Knw., a species confined to the eastern part of the Mediterranean (Greece, Corfu, etc.)

where it is by no means uncommon, and it is really incredible that it should be a native either of Clydesdale from which Cameron (Vol. IV) records it, or of the locality given by Rudow for his *gynandromorpha*, viz., the Harz. The record must certainly be due to some confusion on Cameron's part between specimens sent to him by correspondents from abroad and captures of his own. I shall therefore omit it from my Tables.

SYNOPTIC TABLE OF BRITISH *TENTHREDOPSIS*, ♀ ♀.

1. Apical margin of clypeus without a definite "excision" in its middle; but it is often gently and evenly sinuated inwards throughout its whole extent2.
- Clypeus with a definite excision in the middle which does not extend to the extremities of its apical margin. (For this and other characters of our only British species, cf. Ent. Mo. Mag., October, 1912.)....*excisa*, Thoms.
(= *ornata*, C., nec Lep.)
2. Large forms (about 12 mm. long) with the hypopygium (N B) very large, prominent and *deeply excised at its apex* (just before the base of the saw sheath). 2nd recurrent *n.* interstitial with 2nd cubital *n.* Tegulae and edge of pronotum black except in var. *concolor*. The group includes many named varieties, differing greatly in colour among themselves, and also (except var. *concolor*) from their very distinct and yellowish (white and orange) male! (I have taken the latter paired with var. *varia*!) Formerly all were believed to be "good species."

I possess British specimens of the following forms, and quote a few where I have taken them—but no doubt most of them occur in all parts of the islands. (The following List is a corrected version of that given 1 October, 1912, and should be substituted for it.)

- (a) Abdomen red to a large extent in the middle, black at base and apexvar. *nigronotata*, Cam. (Types at S. Kensington)
= *thomsoni*, Knw. (Taken in Warwickshire and named by the author.)
- (b) Abdomen black at base only, red at apex. Legs red...
varia, Gmel. (Surrey)
= *cordata*, C.
- (c) Like *varia* but legs black*cordata*, Geoffr. (Surrey)
= *femoralis*, C.
- (d) Abdomen all black, legs red...
thoracica, Geoffr. (Surrey, Hants, Warwickshire)
= *microcephala*, C.
- (e) Like *thoracica*, but legs black.....*caliginosa*, Cam. (Surrey).

(f) Ground-colour yellowish as in the ♂, but the abdomen may be more or less widely blackened above (no part of the body is red). This form may possibly be included by Cameron under his "*nassata*." It seems not to be very common...

concolor, Knw. (Surrey).

All the above forms occur on the Continent also.

(g) I suspect that *nigriceps*, C. (type at S. Kensington), is also a form of this species. Its coloration, described (so far as I can see) correctly by the author, separates it from any other known species. But the whole apex of the 'abdomen, including the hypopygium, has been removed, no doubt to extract the saws, and it is impossible to say what the insect really is. Nothing like it is known to continental authorities!...

litterata, Geoffr.

(=*nassata*, Thoms.)

- Hypopygium simple and normal, not excised at apex.....3.
- 3. The original yellowish ground-colour of the body is replaced almost entirely by black, or (on the abdomen only) by black and red. Such white or yellow markings as occur are part of the *pictura albida*4.
- Apart from *pictura albida* much of the body retains its pale yellowish ground-colour. Certain regions of it, especially of its dorsal surface, may be blackened more or less extensively in various forms, but on the whole these may be called, as Cameron calls them, "the yellow species." No form known to me as British could well be confounded with any of those whose ground-colours are black and red.

There has been and still remains a good deal of doubt and confusion about the classification and nomenclature of these forms. Cameron made at least six species out of them. Konow in his *Tableaux* recognized only three, but latterly told me that he held a fourth (*dorsivittata*, Cam.) to be a "good species." Dr. Enslin distinguishes two, viz., (1) *nassata*, L. which includes Konow's "*nassata*" and "*tiliæ*" (= *raddatzii*, Knw., olim) perhaps also *dorsivittata*, C. and (2) a species which Konow called *dorsalis*, Lep. (but it would seem that this name is unavailable, and at present I can only call it "sp?"). Personally I find it almost impossible to distinguish Konow's "*dorsalis*" from the smaller forms which Konow called varieties of *tiliæ*, but I will mention the characters on which it has been held that they can be divided.

Forms of *nassata*. ♀.

Forms of sp? (= "*dorsalis*," Knw.), ♀

Vertex less transverse, i.e., squarer (!)
and completely bisected by a
longitudinal furrow.

Vertex more transverse, the dividing
furrow abbreviated posteriorly
(i.e., rather a *pit* than a *trench*.)

Larger, 12 mm. long (but only typical
"*nassata*" reaches such dimen-
sions in this country!).

Smaller 9 to 10 mm. long.

Denticulation of saw coarser (at least it appears so in some of Cameron's figures, but I do not know how far these can be relied upon.)

Denticulation of saw finer (if *inornata*, C., belongs to this sp.)

Interstitial 2nd recurrent *n.* (but *an semper*?).

2nd recurrent *n.* not interstitial (but *an semper*?). In a specimen named *dorsalis* by Konow it is decidedly interstitial!

Posterior calcaria as long as half the metatarsus.

Posterior calcaria not so long as half the metatarsus.

Mesopleuræ hardly ever pale.

Mesopleuræ pale.

Various authors are responsible for the above characters, and as these took different views of the limits of the species distinguished it is difficult to fit them into a single diagnosis! Some of them, I feel sure, are unreliable; and it may be doubted if others are sufficiently definite for practical purposes.

I will now try to separate the *forms* known to me, but must leave it to be decided hereafter how they are to be divided into *species*.

- (a) Large pale yellow ♀ ♀ which, but for their simple hypopygium, might be thought to belong to *litterata*. Copious *pictura albida*, and a minimum of black markings. 2nd recurrent *n.* interstitial in all my own specimens. Spurs measure exactly half the metatarsus. Vertex not very transverse, and evidently sulcate completely down the middle...

Typical *nassata*, L., sec. Enslin (= *nassata*, Knw.).

- (b) Considerably smaller than typical *nassata*, as are likewise all following. May be known by the absence of pale colour the back of the abdomen, which is practically black all c (I have seen few British specimens.)...

lividiventris, Cam. (at S. Kensington)
= "*tiliæ* var. *sagmaria*," Knw. (determined *ab ipso*!).

- (c) Back of abdomen with a broad black central vitta, but pale laterally.....*albomaculata*, Cam. (at S. Kensington)
= *tiliæ* var. *vittata*, Knw. (*det. ab ipso*!).

- (d) Like the last, but the vitta is narrower, nearly linear. Pleuræ pale*tiliæ* var. *dorsata*, Knw. (*det. ab ipso*!).

- (e) Like the last, but the *metapleuræ* are black...

dorsivittata, Cam. (determined by Knw.!).

- (f) The vitta on the abdomen has disappeared altogether...

tiliæ var. *inornata*, Knw. (*det. ab ipso*!).

This is certainly not the *inornata* of Cameron!

- (g) Exceedingly like (d). In fact I can see no tangible difference...

"*dorsalis*, Lep.," determined for me by Konow.

(h) Perhaps a little smaller and paler, otherwise I cannot separate it from (f).....“*dorsalis* var. *diluta*, Knw.” (det. *ab ipso*).

(i) *Inornata*, Cam., is represented by a single ♀ at S. Kensington. I have examined it, but can say only that its ground-colour is more brown (less yellow) than in most forms, and that it gives me the idea of a specimen of (c) or some variety near it which had been discoloured to a certain extent accidentally—possibly by too long sojourning in a damp killing-bottle. Consequently the dorsal black vitta shows less by contrast than usual. (Its saw, as figured by Cameron, certainly appears to have features which may be really distinctive. But one would like to see more specimens!).

I must say that in all the above series I find no positive break at any point, except between (a) and (b) and should have been inclined to consider all from (b) to (i) as one species, but that they are thought to be associated with two very dissimilar ♂♂, and till this point is cleared up, I do not feel able to form any definite opinion*nassata*, L., sec. Enslin.

and

sp ? (= *dorsalis*, Lep., sec. Knw.).

[Since the above was written I have heard from Dr. Enslin that, having examined British specimens sent to him by me of all the above forms except (i), he refers (a) only—the large pale form—to *nassata*, and all the rest to Konow's “*dorsalis*,” which provisionally he calls “*inornata*, Cam.,” the name *dorsalis*, Lep., being pre-occupied by an earlier *dorsalis*, Spin.—F. D. M.].

4. Tegulæ white or sulphur-yellow, concolorous with the edge of the pronotum5.
- Tegulæ fuscous black or brown; if *pale* brown, at least they are darker than the edge of the pronotum6.
5. Hind femora black; a robust and highly coloured species. Base of mesonotum (inner corner of its middle lobes) marked with two paired yellow streaks: this character is liable to be obliterated by unskilful pinning! The posterior margin of the propodeum (= med. segment) is conspicuously and broadly yellow. On the abdomen the sides, and two or three dorsal segments, are deep red, but this colour is more or less interrupted by a black central vitta of variable breadth—sometimes reduced to a mere line*austriaca*, Knw.
- Hind femora red. Much smaller than *austriaca*, but like it very highly coloured. The tempora are almost entirely white, and there is often a conspicuous pale fascia at the apex of the propodeum. The red of the abdomen is often immaculate; if interrupted, the black vitta is seldom very noticeable. (I believe that *picticeps*, C., and *flavomaculata*, C., are merely varieties of one species. The distinctions drawn between them by the author do not hold good for the specimens in his own collection. In Vol. I the tegulæ of these “species” are called ‘fuscous’ and

'black' respectively, but in Vol. IV they are said to be 'pale or white.' The earlier statement was evidently a mere error. Konow's *parrula* is probably a variety of the same species) *flavomaculata*, C.
= *picticeps*, C.

6. Hind femora red. (Perhaps this also is a variety of the last species) ...
elegans, Knw.
 - Hind femora black7.
 7. Mesonotum (inner corner of its middle lobes marked with two little white
flecks *fenestrata*, Knw.
 - Mesonotum immaculate8.
 8. Abdomen very dark; the red on its dorsal surface reduced to mere lateral
spots or obscure narrow streaks or even absent altogether9.
 - Abdomen clearly and conspicuously belted with red12.
 9. Propodeum with a broad yellow margin as in *austriaca*, of which it may
be possibly a melanic form. It is a rather large insect, and the con-
trast between its dark abdomen and the copious *pictura albida* of its
head and thorax give it a very striking appearance. (This is the
tristis of British authors— Stephens, Cameron, and Kirby—but not of
Fabricius, and as that name is accordingly unavailable, I suggest
tristior to replace it) *tristior*, n.n.
(= *tristis*, Steph. etc.).
nec F.
 - Propodeum entirely black10.
 10. A rather large and obscurely coloured form with *pictura albida* reduced
to a minimum; thorax with only the scutellum, etc., white. Dorsum
of abdomen entirely black, only its sides dull brownish-red. *tempora*
seem to be entirely fulvous-brown, and there are indie
of the same colour on the lateral lobes of the mesonotum.
- The only example I have seen of this is Cameron's type of
viceps." I feel quite sure that it has nothing to do with Stephens'
fulviceps, which = *palmata*, Geoffr. (*scutellaris*, C.), but what it is I
cannot say, and on a single specimen I do not care to propose a new
name for itsp.?
(= *fulviceps*, C., *nec* Steph.).
- Smaller, head not brown11.
 11. 2nd recurrent *n.* normally interstitial, edges of pronotum more or less
pale. Hind tibiae red..... *spretta*, Lep.
 - 2nd recurrent *n.* not interstitial, edges of pronotum black. Hind legs
very dark; rufescence of tibiae obscure; hind tarsi black, with some of
the intermediate joints sordidly white *thornleyi*, Knw.
 12. Red of abdomen extending over four or five segments and generally
immaculate. *Pictura albida* very little developed; even the clypeus is
seldom entirely white (it may even be black altogether!), and on the

thorax only the scutellum and cenchri are pale. Hind legs generally very dark, as in *thornleyi*; tibiae often, and metatarsi probably always practically black. Tempora rather swollen behind the eyes.

A common species, and easily recognized in most cases by the colour of the abdomen and the infuscated clypeus ... *coquebertii*, Kl.

- Red of abdomen seldom extending much beyond three segments. Hind legs (except the black femora) not very dark (generally smaller than *coquebertii*, but all these forms are very variable in size). Clypeus generally immaculate white13.
- 13. Head narrowed behind the eyes, tempora usually rather widely flavescent. Edges of pronotum usually yellowish; the tegulae darker, varying from pale-brown to fuscous or black. The red on the abdomen occupies 3 to 4 segments and is very often interrupted in the centre. (This species was first called by Konow *scutellaris*, Pz., and afterwards *campestris*, L., but I cannot think that either identification was correct. In Dr. Enslin's Tables it is still called *campestris*, L., but from the latest communications I have received from him, I gather that he no longer holds that view. The *Tenthredo campestris* of Linné's collection is not a *Tenthredopsis* at all. Dr. Enslin believes that our species is *palmata*, Geoffr., and provisionally I shall call it so ...*palmata*, Geoff.
(= *scutellaris*, C.)
- Head not narrowed behind the eyes. Very like *palmata*, but with rather less *pictura albida*, and the red of the abdomen commonly occupying three segments only, and immaculate. (Dr. Enslin treats this form, and also *elegans*, Knw., *vide supra*—as varieties of *piciticeps*. I think, however, that, as yet, we have no sufficient evidence to settle this question, and can express no opinion of my own about it). According to Konow *gibberosa* may be recognized by the unusual convexity of its scutellum; but I do not think that this character (even if it be real) is sufficiently definite to be very useful*gibberosa*, Knw.

NOTES ON BRITISH PHORA (FURTHER ADDITIONS).

BY JOHN H. WOOD, M.B.

Phora connexa, sp. n. Most nearly allied to *vitrea*, with which I shall compare it in the following description:—

♂. Thorax, abdomen, and frons dull black. Costa and veins black, in *vitrea* brown; thin vein 1 leaves with a bold curve, the curve gentle in *vitrea*. Legs blackish-brown or brownish-black, in *vitrea* yellowish-brown; hind femora stouter than in *vitrea*, and the outside spurs of the hind tibiae (small and delicate in *vitrea*) of good size and stoutness. The ventral flaps of the hypopygium narrower than in *vitrea* and more equal on the 2 sides, also the anal organ longer. In other respects like *vitrea*. 1½ mm.

I have taken 3 males—2 of them indoors, both in the first week of August, 1912, and the 3rd was found mixed up with *vitrea*, the locality and date being Stoke Wood, 14/10/09. The most obvious points for its recognition are the dark legs, and the bold sweep of the 1st thin vein into the area of the wing. With *latei-femorata* it agrees in the stoutness of the hind femora and the curve of the 1st thin vein, but otherwise is quite different. For in *latei-femorata*, to mention only some of the distinctions, the legs are yellow; the hypopygium smaller, its flaps symmetrical, very long, slender and of a yellow colour, and bent at the base; and lastly the 2nd and 3rd costal divisions in both sexes are distinctly swollen, an important character overlooked in the original description.

Aphiochæta submeigeni, sp. n. Extremely like *meigeni*, but not half the size, and with no bristles on the outer-side of the seam on the middle and hind tibiæ.

♀. As in *meigeni* the thorax is yellow or reddish-yellow, the abdominal segments black with yellow hind-margins, the 2nd segment projecting at the sides and hence wider than the others. The head has been rather pressed out of shape, but the several parts apparently as in *meigeni*. Wings almost colourless, costa barely to wing middle, venation as in *meigeni*. Legs yellow, a dark spot at apex of hind femora, tibial bristles large and sparse, and present only on the inner side of the seam, no trace of any on the outside of seam. $1\frac{1}{2}$ mm.

I took a single female on the Monnow, 22/6/12. The absence of all trace of a double row of bristles on the middle and hind tibiæ, which is the characteristic of the *meigeni* group, seems to be of sufficient importance for treating it as a distinct species.

Aphiochæta elongata, sp. n. This also belongs to Section 2, in which the scutellar bristles are 4 in number, and its position will be next to *campestris*.

♀. Thorax and abdomen black, the former somewhat shining and with bristles on the meso-pleuræ; the latter dull, long and slender, segment 2 the widest, the others gradually diminishing, the last or 6th cylindrical, and remarkably long and narrow, considerably longer than any other segment, and armed with some small bristles at the end. Frons somewhat shining, fully $\frac{1}{3}$ broader than long; supra-antennal bristles small and approximated, i.e., well within an alignment with the inner bristles of the middle frontals, the under pair half the size of the upper; antennæ rather small; palpi dusky yellow. Wings nearly clear, veins yellow, fringe rather short, costa barely to wing middle, 1 fully twice as long as 2, angle at fork moderate, thin vein 1 runs with a gentle and uniform curve to end well in front of the apex. Legs yellowish-brown, tibial bristles rather weak. $1\frac{1}{4}$ — $1\frac{1}{2}$ mm.

The male I have not yet come across, but I have before me 3 females, all taken in Stoke Wood, the dates being 12/7/07, 15/5/12, and 19/6/12. The only one of our British species for which it could be mistaken would be *campestris*, but besides many small differences, the elongated ovipositor-like 6th segment would be amply sufficient to distinguish it.

Aphiochæta vestita, sp. n. A deep black insect with palish wings, belonging to Section D, and according to the table falling into the neighbourhood of *pectoralis* and *clavipes*, but considerably larger than either and with little general resemblance to them.

♀. Thorax and abdomen black; the former scarcely shining, the pubescence on the hinder part between the dorso-centrals strongly developed, the individual hairs projecting well beyond the margin, meso-pleuræ strongly bristled but without one specially large. Frons slightly shining, about $\frac{1}{3}$ broader than long; 4 nearly equal supra-antennal bristles, the upper pair just within an alignment with the inner bristles of the middle frontals, the under pair closely approximate; antennæ and aristæ normal; palpi black and well bristled. Wings pale yellowish-brown, fringe long, costa rather more than $\frac{2}{3}$ wing length, 1 more than half as long again as 2 + 3, angle at fork small, thin vein 1 leaves almost without a curve. All the legs, even the fore ones, black; hind femora and tibiæ stout, the bristles on the latter small and delicate. Halteres deep black. $1\frac{1}{2}$ mm.

One female taken in Stoke Wood a year or two ago on the last day of April. Although but a single specimen, there can be no doubt of its being a good species. The hairiness of the thorax behind is a most unusual feature, and other important characters serve at once to distinguish it from any of the forms with which either of the two Tables bring it into connection.

Hypocera irregularis. Not one of my captures last autumn gratified me more than the sweeping up from under spruces in Stoke Wood of a 2nd male of this interesting insect, confirming as it does the original description in every detail, down to the hair-like inner branch of the 2nd thick vein, which must therefore be considered a normal character and not, as was thought it might be, an accidental one.

Aphiochæta derasa. Mr. Brues of the Bussey Institution writes me that a prior name for this is *albidohalteris*, Felt. The author described it from American specimens, so that it must be an insect of very wide distribution. I learn from Mr. F. W. Edwards of the British Museum that he has bred it from mushrooms, bought in the market.

Tarrington, Hereford:

March 11th, 1914.

Wicken Fen.—The National Trust for Places of Historic Interest or Natural Beauty have now made arrangements for the appointment of a wateher for their property in Sedge Fen, Wicken, Cambridgeshire. Applications for permission to visit this property should be addressed to A. H. Evans, Esq., Secretary of the Local Committee, 9, Harvey Road, Cambridge; or to S. H. Hamer, Esq., The Secretary of the National Trust, 25, Victoria Street, London, S.W.—S. H. HAMER, *Secretary*: April 24th, 1914.

Timarcha punctata, Laich. —an introduction by commerce.—On October 16th and again on November 4th, I picked up a Timarchid beetle on the road near my house. It was obviously neither of our British species, and so, in the absence of a good reference library or museum, I sent it to my friend, Mr. W. E. Sharp. He passed it on to Mr. Newbery, who named it from the British Museum collection as *Timarcha punctata*, Laich. It hails from Tripoli, Tunis, and Marocco, and had probably, as I at first suspected from the fact that Timarchid species are common in North Africa, been introduced in esparto grass for use in the local paper mill. It seems probable that a search in the stores of this material would reveal a number of other beetles from the chotts of the Atlas region.—Geo. B. WALSH, 166, Bede Burn Road: May, 1914.

Aquatic Coleoptera in Cumberland.—There appears to be but one record of the occurrence of *Deronectes latus* in Cumberland, and that refers to its capture near Lanercost, in 1855. I took a single specimen of this beetle last month (April) in a small beck which runs into the Caldew, near Cummersdale, Carlisle. Its reappearance after sixty years is of some interest.

In the "Transactions of the Carlisle Natural History Society," Mr. F. H. Day refers to an old record of *Hydræna nigrita* from the Caldew, but doubts its authenticity as modern collectors have not found the beetle in Cumberland. I am glad to add some confirmatory evidence for this record. I took *Hydræna nigrita* from the same beck as *Deronectes latus*, again a single specimen. *Hydræna gracilis* and *Platambus maculatus* also occurred. Mr. Balfour Brow has kindly confirmed the identity of these specimens.—H. H. WALLIS, Trent College, Derbyshire: May, 1910.

Proteinus crenulatus, Pand., in Cumberland.—As supplementary to the records of this beetle in this Magazine, ante, p. 92, I may state that I have a specimen in my collection taken within the boundary of the City of Carlisle. It was taken last March from hedge cuttings which had laid over winter in a lane. In addition to the middle tibiæ being strongly crenulate, the lower halves of the hind tibiæ are also crenulated.—JAS. MURRAY, 2, Balfour Road, Carlisle: April 17th, 1914.

Early emergence of Dicranura bifida.—On April 19th I found a newly-emerged ♂ *Dicranura bifida* on the trunk of a poplar at Cookham.—C. G. DOUGHTY, 12, Woodstock Street, Oxford Street, W.: April 20th, 1914.

Reviews.

"THE INDIAN JOURNAL OF MEDICAL RESEARCH." The Official Organ of the Indian Research Fund Association. Vol. I, No. I. July, 1913. Thacker Spink & Co., Calcutta. Price, 2 rupees.

This Journal is to be a quarterly one, the subscription being 6 rupees in India, 10/- foreign, and the number under review contains 211 pages and numerous plates. The articles devoted to Entomology comprise two joint papers by Messrs. W. S. Patton and F. W. Cragg, of the King Institute, Gundry, Madras; and two by F. M. Howlett, Imperial Pathological Entomologist. The first of the joint papers is entitled "On certain Hæmatophagous Species of the Genus *Musca*," and deals with four species of *Musca* (two of them described as new to Science), which though blood-suckers, are not "biters," but resort to open sores and the wounds inflicted by other "biters." The second joint paper is entitled "A new species of *Philæatomyia*, with some remarks on the genus." The drawings by Mrs. Patton represent both sexes of all the species on a large scale, with figures of the egg, larvæ, and pupæ. The first of Mr. Howlett's papers is on "The natural host of *Phlebotomus minutus*," which he finds to be lizards of the family *Gerrhonidae*; the other forms Part I of a treatise on "Insect life-histories and Parasitism."

"SYRPHIDÆ OF OHIO." By C. L. METCALF. Bulletin No. 1 of the Ohio Biological Survey, forming No. 31 of Vol. XVII of the Ohio State University Bulletin, published by the University of Columbus, Ohio. June, 1913. pp. 122, pls. 11.

This paper brings together, and summarizes the results of, a number of observations on the life-histories of *Syrphidæ*, published from time to time in the "Ohio Naturalist," with the addition of a useful summary of the recorded biology of the family and a record of the species which up to the present have been captured in Ohio. Two interesting facts recorded by the author are (1) that the larvæ of *Paragus* feed on Aphids occurring on *Rumex*, *Arctium*, and *Carduus*, and (2) that the larvæ of *Syrphus xanthostomus* and an undetermined species live inside the gall of gall-producing Aphids of the genera *Pemphigus* and *Colopha*. Eight of the black and white plates are devoted to illustrating details of larvæ and pupæ, but the author would have materially assisted one in studying the figures if he had used the same reference letter to an anatomical detail in all figures. The economic value of many *Syrphidæ*, owing to the aphidophagous habits of the larvæ, has been very little appreciated, and consequently little studied. It is to be hoped that the present work will stimulate research along these lines.

Obituary.

The Rev. Edwin Newson Bloomfield, M.A.—The veteran Rector of Guestling, Sussex, recently passed away at the Rectory after a short illness in his 87th year. Born in Suffolk on Sept. 25th, 1827, he began to take an interest in Natural History when quite a boy, being attracted chiefly to botany and geology. In October, 1846, he went to college, and after graduating remained at Cambridge till 1863. During these years he had the privilege of admission to the Ray Club, a small Natural History Society, which met once a week and consisted of twelve members and six associates, and in this way he came into close touch with many distinguished scientific men. His principal interest at this time was in botany and geology, and he contributed largely to Henslow and Skepper's "Flora of Suffolk," published in 1860. Leaving Cambridge in 1863, he became rector of Guestling, near Hastings, a position which he held till his death. At this place he took up the study of *Lepidoptera*, and for this the extensive woods in close proximity to the Rectory gave him exceptional opportunities. In 1876, in conjunction with the writer and several other local naturalists he entered enthusiastically into the scheme for publishing catalogues of the flora and fauna of the Hastings district. The original list, published in 1878, was followed at intervals by three supplements. Since 1898, further additions have been annually recorded in the "Hastings and East Sussex Naturalist," his last contribution being published in April of the present year. He also paid a good deal of attention to British *Diptera*, and contributed largely to the compilation of lists of the flora and fauna of Norfolk and Suffolk, himself publishing a good list of the Suffolk *Lepidoptera*. He joined the Entomological Society of London in 1886. His was a most genial character; he rejoiced in the successes of others, and was always ready to place his large stores of knowledge at the disposal of any who needed such help. He was never married.—E. A.

Societies.

YORKSHIRE NATURALISTS' UNION: ENTOMOLOGICAL SECTION.—On the kind invitation of Professor W. Garstang, M.A., F.Z.S., a large number of the members of the Entomological Section of the Yorkshire Naturalists' Union visited the Leeds University on March 21st last, the special object being to examine the very fine collection of Exotic and European *Lepidoptera* formed by the late Mr. A. H. Clarke, which had been presented to the Leeds University Museum. The Collections were studied with great interest and admiration so long as daylight allowed, after which the members were most hospitably entertained to tea by the President of the Section, Dr. E. O. Croft. In the evening a meeting was held in the University, when two papers were read: the first, by Professor Garstang, on "Mimicry in *Lepidoptera*," illustrated by a large number of specimens; the other, by Mr. B. Morley, on "the effects of four years defoliation of trees in West Yorkshire woods by larvæ of the *Hybernidae*." Both papers were of great interest, and created a good deal of discussion among the members. Afterwards, Mr. W. D. Roebuck introduced the subject of "Nature

Reserves in Yorkshire," but the hour being late, discussion on it was postponed to the yearly meeting of the Section in October next.—G. T. PORRITT.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY
Thursday, April 9th, 1914.—Mr. R. ADKIN in the Chair.

Mr. C. P. Emmett was elected a Member.

Mr. R. Adkin exhibited three *Dasychira fascelina*, one with the usual black transverse lines largely yellow, and another with the black markings intensified, with absence of the yellow freckling. Mr. Edwards, several very conspicuous and beautiful *Heterocera* from Burmah, including *Argina argus*, *Euchromia formosa*, &c. Mr. Sich, specimens of *Lita melanella* from Weymouth, first discovered in England by the late Mr. Boyd in 1858. Mr. Hy. J. Turner, a long series of *Erebia pronoë* from the Austrian Tyrol and Switzerland, and read notes on the variation, both local and aberrant, and the distribution of the species. Mr. West, Greenwich, several drawers of the Society's Collection of British *Lepidoptera*, to show the additions made in the *Pyrales* and *Tortrices* by the donations of Mr. Dawson. Mr. Platt Barrett, a series of *Coccyx strobilella* bred from spruce cones collected at West Wickham some weeks ago.

Thursday, April 23rd, 1914. — Mr. B. H. Smith, B.A., F.E.S., President, in the Chair.

A Special Exhibition of Orders other than *Lepidoptera*. Mr. Stanley Edwards exhibited numerous large and conspicuous species of exotic *Coleoptera* and *Hymenoptera*. Mr. Ashdown, a collection of Swiss *Coleoptera* including 40 species of *Longicornia* taken by himself. Mr. Gibbs, the lantern-fly *Fulgora lanternaria* and other conspicuous insects sent to him from British Honduras, among a collection of butterflies and moths. Mr. Step, ♂ and ♀ *Asilus crabroniformis*, a predaceous Dipteran, with *Tachina grossa* and *T. fera*, two hairy flies which attack larvæ. Mr. West (Greenwich), 13 drawers of the Society's reference collection (*Coleoptera*, *Orthoptera*, *Neuroptera*, *Hymenoptera* and *Hemiptera*), a box of typical examples of *Diptera* presented to the Society by Mr. Andrews, and his own collection of British *Homoptera*. Mr. C. B. Williams, the beetle *Lochmaea suturalis* on heather from Cheshire, and willow stems damaged by larvæ of *Cecidomyia saliciperda*. Mr. Andrews, the following very rare *Diptera* and contributed notes:—*Lispe pygmæa*, Fall., *Limnophora æstuum*, Vill., *Macronychia griseola*, Fall., all from Porthcawl; *Phorbia pava*, Ztt., from Chattenden; *Fannia ciliata*, Stein, from Milford; and *Chirosia parvicornis*, Ztt., from N. Kent. Mr. R. Adkin, Rösels's *Der Natuurlyke Historie der Insecten*. Mr. Dennis, photographs of plant-galls. Mr. E. E. Green, many species of *Coccidæ*, largely from Ceylon, with coloured drawings of their life-histories. Mr. B. Adkin, pieces of bark showing depredations of the *Homoptera*. *Chermes corticalis* on larch, and *C. viridis* on Weymouth pine. Mr. Moore, 925 mites of the genus *Gamasus* taken from a beetle.—H. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, April 1st, 1914.*—
Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mrs. Maria Ernestina Walsh, Soekaboemi, Java; Messrs. J. P. Ramakrishna Aiyra, B.A., F.Z.S., The Agricultural College, Coimbatore, S. India; Eugène Bendefitter, 11, Rue St. Jaques, Le Mans, France; Rev. Prebendary Edward Grose Hodge, The Vicarage, Paddington; A. J. T. Janse, 1st Street, Gezina, Pretoria, S. Africa; Charles Nicholson, 35, The Avenue, Hale End, Chingford, N.E.; Frederic de la Mare Norris, B.Sc., The Agricultural Department, Kuala Lumpur, Malay States, were elected Fellows of the Society.

Dr. T. A. Chapman exhibited some specimens of the genus *Curetis* from the Tring Museum, to illustrate a point of mimicry. Dr. F. A. Dixey, specimens of *Pierinae* from Western China, with drawings of their scent-scales, and remarked on them. Mr. O. E. Janson, both sexes of a new *Papilio* belonging to the *gambrisius* group and apparently most nearly allied to *P. ormenus*, Guér., also the rare *Papilio gabrielis*, Roths., both recently received from the Admiralty Islands. Mr. Donisthorpe, a small nest of the ant *Cremastogaster schenki*, Forel, from Madagascar, fastened on the stem of a tree; also a small beetle, *Somiclaviger sikore*, Wasmann, which came out of this nest, and is a guest of *C. schenki*. Mr. C. B. Williams, specimens of the genus *Acerentulus* of the order *Protura*. Mr. E. B. Ashby, a ♀ of *Dryas pandora*, with darkly suffused underside hind-wing, very near the ab. *blacina*, Obth., from La Granja; also an aberration of *Melitæa athalia*, from Hinterzarten, belonging to the *eos* group of aberrations of this species.

The following papers were read: "Descriptions of South American *Micro-Lepidoptera*," by E. Meyrick, B.A., F.R.S., F.E.S. "A Revision of the Tipulid Genus *Styringomyia*," by F. W. Edwards, F.E.S.—GEO. WHEELER
Secretary.

SOME RECORDS OF SCOTTISH SIPHONAPTERA.

BY JAMES WATERSTON, B.D., B.Sc.

(Continued from page 91.)

CERATOPHYLLUS SCIURORUM, *Schrk.*

♂, *Sciurus vulgaris*, Pitlochry, N.B. 16.iv.1898. Presented by Mr. Peace (Brit. Mus.).

♂♂, ♀, *Sciurus vulgaris*, Innerwick, East Lothain. P. H. Grimshaw. 1899 (?). (Rothsch. Coll.).

Mustela erminea, Lethen, Nairn. A. Brodie. 25.xi.1899. (Rothsch. Coll.).

2 ♂♂, 12 ♀♀, *Sciurus vulgaris*, Fortrose, Mr. Oldfield Thomas. (Rothsch. Coll.).

Also in Rothsch. Coll. (L. G. Esson)—

11 ♂♂, 3 ♀♀, *Mustela erminea*, Durris, Aberdeenshire. 6.ii.11.

♂, *Sciurus vulgaris*, Cults, Aberdeenshire. 3.i.12.

♀, *Mustela erminea*, Nigg, Kincardineshire. 13.i.12.

♂ and ♀. *Sciurus vulgaris*, Cupar, Fife. Nov., 1912. J. Skinner.

CERATOPHYLLUS PENICILLIGER, *Grube*.

♂ ♂, ♀ ♀, *Hypudæus glareolus*, North Berwick, N. C. R. Sept., 1898. (Rothsch. Coll.).

♂ and ♀ ♂, *Putorius ermineus*, Balminnoch, Wigtownshire. Harold Schwann. 30.x.04. (Rothsch. Coll.).

♂, *Mus decumanus*, Carie, Rannoch, N.B. F. J. Cox. 15.vii.06. (Rothsch. Coll.).

2 ♂ ♂, *Mustela vulgaris*, Kinneff, Kincardineshire. J. R. Fraser. 28.ii.10.

9 ♂ ♂, 10 ♀ ♀, *Microtus orcadensis*, Sanday, Orkney. W. R. O. Grant. 23—27.vi.11 (Rothsch. Coll.).

The Rothsch. Coll. contains the following from *Hypudæus glareolus*, taken by L. G. Esson—

(a) Aberdeen—

7 ♂ ♂, ♀, Hilton. Dec., 1910—Jan., 1912.

6 ♂ ♂, 16 ♀ ♀, Cairncry. 16—21.xi.11

39 ♂ ♂, 54 ♀ ♀, Rosehill. Nov.—Dec., 1911.

2 ♂ ♂, Banks of Don. 28.x.11.

(b)

♀, Craigiebuckler. 29.x.10.

3 ♂ ♂, 3 ♀ ♀, Achmore, Assynt, near Lairg, Sutherlandshire. 28.ii.11.

3 ♂ ♂, 6 ♀ ♀, Nigg, Kincardineshire. 15.xii.11.

CERATOPHYLLUS WALKERI, *Rothsch.*

♂, *Hypudæus glareolus*. Rosehill, Aberdeen. L. G. Esson. 11.xi.11 (Rothsch. Coll.).

The remaining Ceratophylli occur in birds' nests. Specimens taken on the birds themselves have received an asterisk.

CERATOPHYLLUS GALLINÆ, *Schrk.*

♂ ♂, ♀ ♀, *Passer domesticus*, and *Turdus merula*, Carie, Rannoch, N.B. F. J. Cox. 23—24.vii.08. (Rothsch. Coll.).

2 ♀ ♀, *Gallus domesticus*, Kinneff, Kincardineshire. J. R. Fraser. 14.vi.09.

♀, *Muscicapa grisola*, Kinneff, Kincardineshire. Mr. Cormack. 15.vi.09.

9 ♂ ♂, 15 ♀ ♀, *Sturnus vulgaris*, Loudoun, Ayrshire. J. Gloag. 12.vi.09.

3 ♂ ♂, 8 ♀ ♀, *Hirundo rustica*, Howletburn, Galston, Ayrshire. J. Gloag. Sept., 1910.

♂, 2 ♀ ♀, Cat, Kinneff. J. R. Fraser. 28.ii.10. (In company with *S. cuniculi*.)

From the Ollaberry district, North Mavine, Shetland:—

9 ♂ ♂, 11 ♀ ♀, *S. vulgaris*, nr. Manse. June, 1910.

2 ♂ ♂, 4 ♀ ♀, same host, Little Roe Island, Yell Sound, in rabbit hole. July, 1910.

DESIDERATA.

Mr. J. EDWARDS, Colesborne, Cheltenham, will be grateful to Entomologists, who have collected Coleoptera or Hemiptera in Norfolk during the past five years for particulars of their captures for present publication.

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73 ♂ ♂, 62 ♀ ♀, *Columba livia*, Little Roe Island. 17.vii.11.

♀, **Troglodytes parvulus*, Lamba. 25.ix.12.

CERATOPHYLLUS FRINGILLÆ, *Rothsch.*

♀, **Anthus obscurus*, Ollaberry. 18.x.10.

CERATOPHYLLUS GAREI, *Rothsch.*

♂ ♂, ♀ ♀, *Larus fuscus*, Walls, Shetland. Aug., 1906, per Watkins and Doncaster. (Rothsch. Coll.).

♂, ♀, *Lagopus scoticus*, Perth. A. E. Shipley. 2.vii.37. (Rothsch. Coll.).

37 ♂ ♂, 36 ♀ ♀, *Ædemia nigra*, North Mavine, Shetland. Bred throughout summer and autumn, 1910, from July onwards.

4 ♂ ♂, 6 ♀ ♀, *Larus*, var. spp., near Uyea Island, North Mavine.

13 ♂ ♂, 15 ♀ ♀, *L. canus*, Little Roe Island, North Mavine. May, 1911. Also ab. 3 ♂ ♂, 7 ♀ ♀, *L. fuscus*.

♀, **Ægialitis hiaticula*, Ollaberry. 22.ix.10.

♀, **Gallinago cælestis*, Queyfirth, nr. Ollaberry. R. H. Macnair. 31.viii.11.

4 ♂ ♂, 3 ♀ ♀, *Columba livia*, Little Roe Island. 17.vii.11.

45 ♂ ♂, 77 ♀ ♀, *Sterna macrura*, Tinga Skerry, Yell Sound. 11.vii.12.

♀, *Tringa alpina*, Tinga Skerry, Yell Sound. 11.vii.12.

310 ♂ ♂, 479 ♀ ♀, *Phalacrocorax graculus*, Lamba Island. July, 1912. Last examination of nest made xii.13.

CERATOPHYLLUS FARRENI, *Rothsch.*

♂ ♂, ♀ ♀, *Chelidon urbica*, Carie, Rannoch, N.B. F. J. Cox. 25.vii.08. (Rothsch. Coll.).

4 ♂ ♂, 16 ♀ ♀, *C. urbica*, Dunure, Ayrshire. J. Gloag. 3.ix.10.

CERATOPHYLLUS HIRUNDINIS, *Curt.*

♂ ♂, ♀ ♀, *Chelidon urbica*, Carie, Rannoch, N.B. F. J. Cox. July, 1908. (Rothsch. Coll.).

12 ♂ ♂, 13 ♀ ♀, *C. urbica*, Dunure, Ayrshire. J. Gloag. 3.ix.10.

CERATOPHYLLUS COLUMBÆ, *Gerv.*

Between June 3rd and June 5th, 1897, Mr. W. R. O. Grant collected a series of this insect from nests of *Columba livia*, Sutors of Cromarty, N.B. Of these, 10 ♂ ♂ and 10 ♀ ♀ are in the British Museum, and both sexes in Rothsch. Coll. [Referred to Novit. Zool., Vol. VII, p. 542, December, 1900.]

CERATOPHYLLUS GALLINULÆ, *Dale.*

♀, *Mus sylvaticus*, Cromarty, N.B. W. R. O. Grant, 1899. (Rothsch. Coll.)

The following are in the Rothsch. Coll. from Lesmahagow, Lanarkshire,

J. Clark, per Watkins and Doncaster: - ♂, ♀, *Anthus pratensis*, 22.vii.06; ♂ ♂, ♀ ♀, *Troglodytes parvulus*, 5.viii.06; ♀ ♀, *Fringilla cælebs*, 31.vii.06; ♂ ♂, ♀ ♀, *Motacilla lugubris*, 20.vi.06; ♂, ♀ ♀, *Muscicapa grisola*, 5.viii.06; ♂ ♂, ♀ ♀, *Phylloscopus collybita*, July, 1906.

Also (same collector) ♀, *Motacilla melanope*, Coalburn, Lanarkshire. June, 1906.

From the following Shetland localities: - ♀, *Anthus pratensis*, Walls, J. Clark, per Watkins and Doncaster, June, 1906 (Rothsch. Coll.); ♀, *Alauda arvensis*, Swinister, nr. Ollaberry, 10.vi.10; ♀, **Troglodytes parvulus*, nr. Ollaberry, 20.ix.10; 3 ♂ ♂, 6 ♀ ♀, *Columba livia*, Little Roe Island, 17.vii.11. 3 ♂ ♂, **Fulmarus glacialis*, Uyea, N. Mavine. April, June, 1912. ♂, **T. parvulus*, Pettadale Water, N. Roe. 26.v.12. ♀, **Alauda arvensis*, Eastness. 8.vii.12. ♂, ♀, *Anthus obscurus*, nr. Heylor, Ronas Voe. 13.vii.12. ♀, **Saxicola ænanthe* (2 examples), Gluss Voe, W. 28.iv.13.

♂, **Fringilla cælebs*, Lahill, Largo. 29.x.12. L. J. Rintoul and E. V. Baxter.

♂ ♂, ♀ ♀, *Erithacus rubecula*, Carie, Rannoch, N.B. F. J. Cox. July, 1908. (Rothsch. Coll.).

6 ♂ ♂, 3 ♀ ♀, *Corvus monedula*, Dunearn Hill, Burntisland, Fife. J. H. Ashworth. 6.xi.09. (Rothsch. Coll.).

CERATOPHYLLUS VAGABUNDUS, *Bohem.* (= *INSULARIS*, *Rothsch.*).

♀ (?), *Muscicapa grisola*, Gorebridge, Midlothian. J. W. 12.vii.06. (Rothsch. Coll.).

CERATOPHYLLUS BOREALIS, *Rothsch.*

♀, from **Saxicola ænanthe*, Ollaberry. June, 1912.

2 ♂ ♂, 2 ♀ ♀, *same host (2 birds), Gluss Isle, E. 23.iv.13.

♂ and ♀, nest of *Sterna macrura*, Tinga Skerry, Yell Sound. 11.vii.12.

24 ♂ ♂, 30 ♀ ♀, nest of *Anthus obscurus*, nr. Heylor, Ronas Voe. 13.vii.12. Found as larvæ chiefly and subsequently bred.

♀, **Alauda arvensis*, Gluss Isle, E. 23.iv.13.

This is still one of our rarer *Ceratophylli*. Besides the above, I have it from nests of *C. aquaticus* and *L. argentatus*. The type was taken in nest of *Sula bassana*.

CTENOPHTHALMUS AGYRTES, *Heller.*

♂, *Crossopus ciliatus*, Ackergill, Wick, Caithness. M. R. Pryor. 31.viii.1896. (Rothsch. Coll.).

♂ ♂, ♀ ♀, *Hypudæus glareolus*, North Berwick. N. C. R. Sept., 1898. Also ♂ from *Mus sylvaticus*. (Rothsch. Coll.).

[The above captures are briefly mentioned Novit. Zool., Vol. V, p. 539, 1898.]

♂ ♂, ♀ ♀, *Mus sylvaticus*, Balminnoch, Wigtownshire. Harold Schwann. Aug., 1904. (Rothsch. Coll.).

Also ib. ♂, *Putorius ermineus*. 30.x.04. (Rothsch. Coll.).

♂ ♂, ♀ ♀, *Microtus agrestis exsul*, (a) Carie, Rannoch, (b) Kinloch Rannoch, N.B. F. J. Cox. July, 1908. (Rothsch. Coll.).

2 ♂ ♂, *Mustela vulgaris* and *M. putorius*, Kinneff, Kincardineshire. J. R. Fraser. 14.iii.10.

♂, 3 ♀ ♀, *Talpa europæa*, Ballindalloch. A. McIntosh.

♀, *T. europæa* (both type and cream coloured var. were forwarded), Howletburn, Galston, Ayrshire. J. Gloag. 30.i.11.

At Ollaberry this species is the commonest flea on *Mus musculus*. Found on this mouse both in and out of doors and in its nests. Various records 1910-12. In all 8 ♂ ♂, 18 ♀ ♀ taken.

4 ♂ ♂, 15 ♀ ♀ nest of *Mus sylvaticus*, Ollaberry. J. Williamson. 23.i.12.

In the Rothsch. Coll. are the following taken by L. G. Esson—

(a) Aberdeenshire—

8 ♂ ♂, 13 ♀ ♀, *Hypudæus glareolus*, Hilton Dec., 1910—Nov., 1911.

2 ♀ ♀, *Hypudæus glareolus*, Rosehill. 29.xii.10.

14 ♂ ♂, 29 ♀ ♀, *Mus sylvaticus*, Rosehill. Oct.—Nov., 1911.

♂, ♀, *Sorex vulgaris*, Rosehill. 18.xi.11.

4 ♂ ♂, 4 ♀ ♀, *Mus sylvaticus*, Banks of Don. 7.i.11.

♀, *Arvicola amphibius*, Banks of Don. 19.x.11.

♀, *Hypudæus glareolus*, Seaton. 12.xii.10.

♂, *Sorex vulgaris*, Rubislaw. 23.ii.11.

♀, *Sorex vulgaris*, Maiden Craig. 21.ii.11.

♀, *Mustela erminea*, Inch. 18.ii.11.

(b) Kincardineshire—

14 ♂ ♂, 6 ♀ ♀, *Sorex vulgaris*, Nigg. Nov., 1910, 1911.

5 ♂ ♂, 7 ♀ ♀, *Arvicola amphibius*, Nigg. 27.xi.11.

2 ♂ ♂, 10 ♀ ♀, *Sorex vulgaris*, Cove. 2-20.i.11.

5 ♂ ♂, 8 ♀ ♀, *Mus sylvaticus*, Cove. 20.i.11.

♂, ♀, *Hypudæus glareolus*, Cove. 23.i.11.

(c)

♀, *Hypudæus glareolus*, Craigiebuckler. 29.xii.10.

5 ♂ ♂, *Mustela erminea*, Achmore, Assynt, nr. Lairg, Sutherlandshire. 5.iv.11.

27 ♂ ♂, 27 ♀ ♀, *Arvicola amphibius*, Achmore, etc. 15.v.vii.

12 ♂ ♂, 12 ♀ ♀, *Talpa europæa*, Achmore, etc. July, 1911.

Also collected by W. R. O. Grant—

♂, ♀, *Microtus orcadensis*, Sanday, Orkney. 23-27.vi.11.

4 ♂ ♂, 4 ♀ ♀, *Mus musculus*, Shapinsay, Orkney. 23.vi.11.

CTENOPHTHALMUS BISOCTODENTATUS, *Kolen*.

♂, ♀, *Mustela vulgaris*, Lethen, Nairn, N.B. A. Brodie. 25.xi.1899. (Rothsch. Coll.).

♂, *Talpa europæa*, U. F., Manse garden. Banchory-Devenick, nr. Aberdeen. 14.v.11.

In Rothsch. Coll. (L. G. Esson) there are also—

30 ♂ ♂, 35 ♀ ♀, *Talpa europæa*, Achmore, etc. 14.v.11.

♂, 2 ♀ ♀, *Sorex vulgaris*, Balgownie Links, Aberdeen. 25.i.11.

DORATOPSYLLA DASYCNEMUS, *Rothsch.*

In the Rothsch. Coll. (L. G. Esson)—

♂, *Hypudæus glareolus*, Craigiebuckler. 29.xii.10.

The following all on *Sorex vulgaris*—

♂, Cove, Kincardineshire. 23.i.11.

14 ♂ ♂, 16 ♀ ♀, Nigg, Kincardineshire. Nov., 1911—Jan., 1912.

19 ♂ ♂, 3 ♀ ♀, Hilton, Banks of Don, nr. Aberdeen. Oct.—Dec., 1911.

RHADINOPSYLLA PENTACANTHUS, *Rothsch.*

♂, ♀, *Mustela vulgaris*, Kinneff. J. R. Fraser. 1.iii.10.

In the Rothsch. Coll. (L. G. Esson) are the following—

(a) From *Mustela erminea*—

♀, Inch, Aberdeenshire. 18.ii.11.

5 ♂ ♂, 2 ♀ ♀, Alford, Aberdeenshire. 8.ii.11.

♂, Mintlaw, Aberdeenshire. 8.ii.11.

(b) From *Hypudæus glareolus*—

5 ♂ ♂, 2 ♀ ♀, Nigg, Kincardineshire. May and Dec., 1911.

♂, ♀, Rosehill, Aberdeen. 11.xi.11.

2 ♂ ♂, Hilton, Aberdeen. 23.i.12.

♀, Cairnery, Aberdeen. 17.xii.11.

PALÆOPSYLLA SORECIS, *Dale.*

In Rothsch. Coll.—

♂, ♀, *Crossopus ciliatus*, Ackergill, Wick, Caithness. M. R. Pryor. 31.viii.96.

♀, *Sorex vulgaris*, Carie, Rannoch, N.B. F. J. Cox. 26.vii.08.

Collected by L. G. Esson—

(a) From *Sorex vulgaris*—

66 ♂ ♂, 46 ♀ ♀, from Banks of Don, Cairnery, Cornhill, Cults, Hilton, Murcher Links, Rosehill, Rubislaw, Seaton, nr. Aberdeen. Dec., 1910—Oct., 1911.

66 ♂ ♂, 23 ♀ ♀, Nigg, Kincardineshire. Oct.—Dec., 1911.

2 ♂ ♂, Tullis Hill, Kincardineshire. 5.i.11.

♂, 2 ♀ ♀, Cove, Kincardineshire. Jan., 1911.

12 ♂ ♂, Achmore, Assynt, Sutherlandshire. April—May, 1911.

2 ♂ ♂, ♀, Craigiebuckler, Sutherlandshire. 24.xii.10.

1 ex. Struan, Perthshire. 22.iv.13.

(b)

♀, *Hypudæus glareolus*, Cornhill. 25.xii.10.

2 ♂ ♂, ♀, *Neomys fodiens*, Berrie Hill, Aberdeenshire. 19.xi.10.

♂, *Crossopus fodiens*, Cults, Aberdeen. 4.xii.10.

1 ex. *Sorex pygmaeus*, Nigg., Kincardineshire. 8.xii.11.

PALÆOPSYLLA MINOR, Dale.

From Kinneff, Kincardineshire, J. R. Fraser sends 2 ♀ ♀, 28.ii.10, and ♂ 1.iii.10, from *Mustela vulgaris*. Also ♀ from *M. vulgaris* and *M. putorius* packed together, 14.iii.10.

6 ♂ ♂, 7 ♀ ♀, *Talpa europæa*, Ballindalloch. A. McIntosh. 15.iii.10.

♀, *T. europæa*, Howletburn, Galston, Ayrshire. J. Gloag. 30.i.11.

2 ♂ ♂, ♀, *T. europæa*, U. F. Manse garden, Banchory-Devenick, near Aberdeen. 14.v.11.

In Rothsch. Coll. the following—

11 ♀ ♀, *Hypudæus glareolus*, Cairnery, Aberdeen. L. G. Esson. 17.xii.11.

44 ♂ ♂, 54 ♀ ♀, *Talpa europæa*, Kintore, Aberdeen. L. G. Esson. 29.xii.11.

34 ♂ ♂, 37 ♀ ♀, *T. europæa*, Pitcaple, Aberdeenshire. L. G. Esson. Dec., 1911.

♀ ♀, *T. europæa*, South Sutor, Cromarty. W. R. O. Grant. (No Date.)

♀ ♀, *T. europæa*, Elginshire. J. E. Harting. (No Date.)

PALÆOPSYLLA KOHAUTI, Dampf.

See Rothschild, Ent. Mo. Mag., 2nd series, Vol. xxiii, p. 67. (1912.)

In Rothsch. Coll. from *Talpa europæa*, the following 15 examples, Aberdeen (Kintoe, Pitcaple, Cairnery, Scotstown). Dec., 1911—Feb., 1913. L. G. Esson.

4 examples, S. Sutor, Cromarty. W. R. O. Grant.

LEPTOPSYLLA MUSCULI, Dugés.

♂, *Mus musculus*, N. Gluss, nr. Ollaberry. P. Blance. 15.ix.10.

The only example taken from a series of *M. musculus* examined. See also under *Ct. agyrtes* and *T. poppei*.

LEPTOPSYLLA SPECTABILIS, Rothsch.

In Rothsch. Coll. are—

♀, Lethen Nairn, *Mustela erminea*. A. Brodie. 26.xi.1899.

♀, *Mus sylvaticus*, Guisachan, Beauly, N. C. R. Sept., 1900.

♀, *Hypudæus glareolus*, Tulloch, nr. Fort William, N. C. R. 9.viii.01. (Rothsch. Coll.)

♂, ♀, *Microtus agrestis exsul*, Kinloch Rannoch, N.B. F. J. Cox. 23.vii.08.

Mr. L. G. Esson has taken—

7 ♂ ♂, 7 ♀ ♀ on *Hypudæus glareolus* at Cairnery, Bridge of Don, Hilton, Rosehill, all near Aberdeen during 1911.

2 ♀ ♀, 4 ♀ ♀, *H. glareolus*, Nigg, Kincardineshire. Nov.—Dec., 1911.

♂, *Sorex vulgaris*, Cove, Kincardineshire. 23.i.11.

♂, *Talpa europæa*, Achmore, Assynt. 23.iv.11.

♂, *H. glareolus*, Achmore, Assynt. 28.iv.11.

TYPHLOCERAS POPPEI, *Wagner*.

♀, *Mus musculus*, in nest, Ollaberry. 1.v.11.

15 ♂ ♂, 23 ♀ ♀, nest of *Mus sylvaticus*, Ollaberry. J. Williamson. 23.i.12.

In Shetland *Mus musculus* harbours fleas evidently associated elsewhere with *M. sylvaticus*. This at least is true of the country district where house mice do not come much indoors till after harvest. During summer-time they abound in outhouses and round the crofts. The Shetlanders call *M. sylvaticus* the "Hill" mouse.

HYSTRICHOPSYLLA TALPÆ, *Curt*.

♀, *Talpa europæa*, S. Sutor of Cromarty, N.B. W. R. O. Grant. July, 1893. (British Museum).

In the Rothsch. Coll. are the following:—

♀ ♀. *Crossopus ciliatus*, Ackergill, Wick, Caithness. M. R. Pryor. 31.viii.1896.

♂, ? host, Edinburgh. W. Eagle Clarke. 31.viii.05.

♂, *Mus sylvaticus*, Balminnoch, Wigtownshire. Harold Schwann. 9.viii.04.

♀, *Mus sylvaticus*, Carie, Rannoch, N.B. F. J. Cox. 17.vii.08.

Collected by L. G. Esson—

(a) On *Talpa europæa*—

2 ♂ ♂, Achmore, Assynt, Sutherlandshire. 14.v.11 and vii.11.

2 ♂ ♂, Kintore, Aberdeen. 30.xii.11.

(b) On *Sorex vulgaris*—

6 ♂ ♂, 7 ♀ ♀, Banks of Don, Berrie Hill, Hilton, Rosehill, nr. Aberdeen. Nov., 1910—Oct., 1911.

♀, Maidencraig, Aberdeenshire. 21.ii.11.

7 ♂ ♂, 7 ♀ ♀, Nigg, Kincardineshire. Nov., 1910—Dec., 1911.

2 ♂ ♂, ♀, Cove, Kincardineshire. 2.i.11.

♂, Craigiebuckler, Sutherlandshire. 24.xii.10.

(c) On *Hypudæus glareolus*—

2 ♂ ♂, ♀, Hilton, Rosehill, nr. Aberdeen. Oct.—Nov., 1911.

8 ♂ ♂, 7 ♀ ♀, Nigg, Kincardineshire. Nov.—Dec., 1911.

(d)

2 ♂ ♂, *Mus musculus*, Aberdeen. 29.xi.11.

♂, *Mus sylvaticus*, Cairncry, Aberdeen. 21.xi.11.

ISCHNOPSYLLUS OCTACTENUS, *Kolen*.

♀ ♀, Bat, Tulloch, nr. Fort William, N. C. R. 21.ix.01. (Rothsch. Coll.).

The Manse,

Ollaberry, Shetland:

February, 1914.

DORCATOMA PUNCTULATA MULS., IN ENGLAND.

BY D. SHARP, MA., F.R.S.

Our list of British *Coleoptera* at present includes only two species of *Dorcatoma*, viz., *chrysomelina* and *flavicornis*. Mr. C. J. C. Pool has, however, just detected the existence near London of *D. punctulata* Muls.

Although much confusion has occurred about the species of this genus, the three forms found in England are easily distinguished.

D. chrysomelina has a rough irregular pubescence and a complicated system of punctuation on the elytra, some larger, shallow elliptical punctures being mixed with the general fine punctuation; while in the other two species the larger punctures are not present.

D. flavicornis has a dense, confused, somewhat rugose sculpture of the elytra, and the antennæ are much smaller than in either of the other two species. It varies a good deal in size and colour. An indifferent figure of it is to be found on the plate of the Entomologist's Annual, 1858.

D. punctulata is as a rule larger than *flavicornis*, and has a definite, distinct, fine punctuation, and a splendid development of the antennæ, which in the male are truly remarkable.

As regards the nomenclature of the three insects there has been much confusion, and the synonymy is to some extent uncertain. In G. R. Waterhouse's Catalogue of British *Coleoptera* (date 1858), two species of our genus *Dorcatoma* are included, the names used for them being *flavicornis*, Fabr., and *dresdensis*, Herbst; and in 1860 (Proc. Ent. Soc., Sept. 3) the same authority introduced *D. chrysomelina* as a British insect. Subsequent to this the name of *dresdensis* entirely disappeared from our catalogues in consequence of the belief that the insect was merely one of the sexes of *D. chrysomelina* (cf. Entomologist's Annual, 1861, p. 69). Nevertheless, it is possible that Mr. Waterhouse may have had satisfactory evidence of the existence of *D. dresdensis* as British.

How the facts may have really stood 60 years ago it is now very difficult to say, but it is satisfactory to find that we really have at least three species as natives of this country.

It is possible that as our collections improve, we may find still other species, these insects being only rarely met with.

Brockenhurst:

June 14th, 1914

ADDITIONAL SPECIES OF BRITISH *TYPHLOCYBIDÆ*.

BY JAMES EDWARDS, F.E.S.

The entirely pale species of *Typhlocyba* are more numerous than is commonly supposed, and the capture of the majority of those described below is due to Prof. J. W. Carr, of Nottingham University, who has allowed me to describe them from his collections made in that county. The most reliable characters for the identification of species in this group are, undoubtedly, those derived from the male coupling-apparatus; differences of colour, habitus, and place of occurrence are of course present, but determinations based on these lack the certainty which attends those based upon definite and constant structural characteristics the existence of which can be verified by a competent person at any period of time. The examination of the ædeagus in *Typhlocybidæ* is best made without any preparation of the specimen beyond the removal of any adjacent parts which may obstruct the view, and the magnification employed should not be so great that the whole of the appendages are not in focus at the same time; the writer finds an amplification of about sixty diameters sufficient and convenient.

CHLORITA AURANTIACA.

Chlorita aurantiaca, Fieber, Cicad. d'Eur. (Typhlocybini), p. 19.

Orange-yellow; the claws and some of the spines on the outer side of the hind tibiæ blackish; a somewhat comma-shaped spot on each side of the crown near the inner edge of each eye, three spots next the front edge of the pronotum, one in the middle, and one behind each eye, and a broad stripe down the middle of the scutellum, white. Elytra with a spot at the apex of the subcostal area, the entire supra-brachial area, a large spot at the apex of the brachial area, and the membrane hyaline; when viewed by transmitted light these hyaline spaces, except the supra-brachial area and the spot in the subcostal area, are seen to be very faintly tinged with fuscous.

Length, 3·9 mm.

I caught one male off blackthorn, on the edge of a wood at Colesborne on June 12th, 1913, and saw two other specimens which escaped.

TYPHLOCYBA PRUNICOLA, n. sp.

Male: upper-side very pale yellow; the membrane and a spot in the apices of the brachial and supra-brachial areas fumose. App. sup. falcate, divergent, directed forward almost at a right angle to the

stem of the ædeagus ; app. inf. divided near the base into two branches, of which the upper is about one-third longer than the lower, and directed horizontally cephalad, the lower one straight and directed obliquely downward and outward ; in the dorsal aspect the upper branches of the two app. inf. diverge moderately from their bases, and are strongly curved outward in their distal half.

Female : yellowish-white, membrane and a spot in the apices of the brachial and supra-brachial areas more evidently fumose than in the male.

Length, 4 mm.

This species has been taken by Prof. Carr at Sherwood, on garden plum, and at Nottingham, on plum, 17.VII.

TYPHLOCYBA PLEBEJA, n. sp.

Male : upper-side pale yellow, the crown whitish-yellow, the membrane not obviously fumose. App. sup. falcate, erect, widely divergent ; app. inf. porrect, divided near the base into two similar divergent falcate branches, each having the concavity upward ; in the dorsal aspect the upper branches of the two app. inf. are connivent at the base and thence diverging, the lower branches are sub-parallel, but owing to the greater separation of their points of origin the distance between their tips is only little less than that between the tips of the upper branches.

Female similar in colour to the male.

Length, 3.7—4 mm.

Taken by Prof. Carr at the following localities in Nottinghamshire, namely, Arnold, on oak and lime, 24.VII ; Bulwell Forest, on alder, 21.VII ; Fiskerton, on oak, 25, VII ; and Epperstone Park, on elm and hazel, 6, IX.

TYPHLOCYBA TERSA, n. sp.

Male : upper-side yellowish-white, the membrane faintly fumose, claws blackish. App. sup. straight acicular, diverging at a right angle, a little inclined cephalad ; app. inf. divided near the base into two divergent branches, of which the upper and longer is nearly straight, and the lower falcate with the concavity uppermost ; in the sub-dorsal aspect the upper branches of the two app. inf. are curved outwardly and the distance between their tips is about equal to their length and considerably more than the distance between the tips of the lower branches.

Female : crown, pronotum and scutellum ivory-white, elytra lacteo-hyaline, the membrane distinctly fumose. Length, 4—4.1. mm.

Found by Mr. Oscar Whittaker very abundantly on willows at Birkdale, 1911, and sent by him to me as *T. salicicola*.

TYPHLOCYBA DISTINCTA, *n. sp.*

Male : upperside pale yellow, the colour more intense along the veins of the corium ; the apex of the brachial area and the inner apical angle of the supra-brachial area fuscous. Genital plates concave, on the upperside before the apex a semi-circular notch, close to the distal edge of which there is a triangular tooth ; styles with the apical part bent at an acute angle to the remainder, the bent portion widened for one half of its length then abruptly narrowed and acuminate, the narrow part sub-equal in length to the broad ; the ædeagus in the dorso-cephalad aspect has a triangular expansion towards the apex which gives off two falcate connivent branches enclosing between them a nearly circular space.

The female of this species I have not seen.

Length, 4.6 mm. Aspley Woods, Notts ; Prof. Carr.

TYPHLOCYBA BIDENTATA, *n. sp.*

Male : crown pronotum and scutellum ivory-white, corium canary-yellow (chrome-yellow), membrane slightly fumose ; anterior and intermediate tarsi fuscous, claws of the hind tarsi black. The ædeagus ends in two short straight slightly divergent teeth. Length, 3.9 mm.

Described from one male which I took off hazel at Colesborne on October 15th, 1913.

TYPHLOCYBA CARRI, *n. sp.*

Male : upperside canary-yellow (chrome-yellow), the colour very intense along the veins of the corium, membrane scarcely fumose. Genital style in the interno-lateral aspect ending in two dissimilar divisions of which the upper one has its apical angles unequally produced, the foremost one into a short comparatively blunt point and the hinder one into a long sharp point ; the lower division is simply acuminate. Ædeagus simple, as in *T. douglasi*.

The female is similar in colour to the male.

Length, 4 mm.

Both sexes, Edwinstowe, Sherwood Forest, 30, VIII, 1912 ; one male, Arnold, on oak, 13, VIII, 1913 ; Prof. Carr.

TYPHLOCYBA DIVERSA, *n. sp.*

Male : crown, pronotum, and scutellum ivory-white, corium pale yellow, the colour much intensified along the veins, membrane not obviously fumose. App. sup. strap-shaped, acuminate, directed cephalad at about a right angle to the stem of the ædeagus, parallel, curving upward a little at the apex ; app. inf. divided near the base into two unequal, long, strap-shaped, acuminate branches ; in the dorsal aspect the upper and longer branches of the two app. inf. are widely divergent, directed forward and upward, and rather abruptly curved upward in their apical third ; the lower branches are directed forward, their divergence is about half as much as that of the upper ones, and they are a little curved inward and downward in their apical fifth.

Female similar in colour to the male.

Length, 4 mm.

Aspley Woods, Notts, 4, VII ; Prof. Carr.

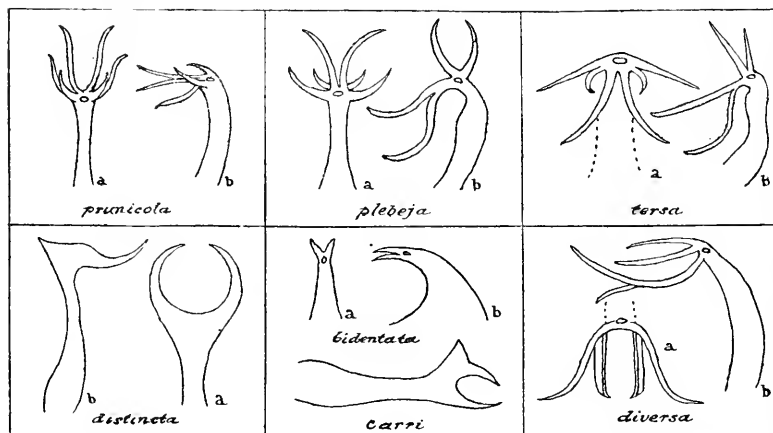
ZYGINA NEGLECTA, *n. sp.*

Distinguished from *Z. flammigera*, Geoffr., by its slightly smaller size, evidently narrower form, and by having the entire clavus and a stripe in the apical half of the brachial area fuscous. Hind tarsi in the male with the basal joint pale, subequal in length to the remaining two, and without any special armature ; second and third joints blackish, base of the former narrowly pale.

This species, though just as variable in colour and pattern of the elytra as its immediate allies, *Z. flammigera* and *Z. tiliæ*, never develops the characteristic pattern of the former, *i.e.*, two irregular, sub-oval, pale spaces on the suture of the closed elytra surrounded by a broad irregular red border ; nor has its male the distinctly thickened and entirely black hind tarsi characteristic of that sex of the latter.

Z. neglecta I have found for many years past in company with *Z. flammigera*, and equally common. One finds rarely a remarkably handsome aberration of it (*ab. rubrinervis*) in which all the veins of the corium, except where interrupted by the costal callus, are carmine-red ; this is analogous to the *ab. ruficosta*, Fieb., of *Z. flammigera*, but in the latter, which is not uncommon in this country, the brachial vein is not red, except where the zigzag band overlies it and sometimes at the apex. *Z. neglecta ab. rubrinervis* is probably the *rosea* of Douglas (Ent. Mo. Mag., XII, p. 77, 1876), and possibly of other writers ; but certainly not of Flor, since the latter is very emphatic about the

structure of the hind-legs in the male of his species, of which he says: "an den Hinterbeinen sind die Tarsen merklich länger als bei *T. blandula*, $\frac{3}{5}$ bis $\frac{2}{3}$ so lang wie ihre Schienen, ihr erstes Glied $1\frac{1}{2}$ mal so lang wie die 2 folgenden zusammen und an seiner Unterseite mit 2 Reihen langer feiner weisser Härchen besetzt, welche wimperartig abstehen; auch die Hinterschienen haben an der Innenseite eben so lange und feine abstehende weisse Haare in einer Reihe dicht stehend, während mehr an der Aussenseite die vereinzelt etwas kräftigeren aber kürzeren Dornchen stehen."



EXPLANATION OF THE DIAGRAMS.

Typhlocyba prunicola; a, ædeagus in the obliquely cephalad aspect; b, the same from the side.

„ *plebeja*: ditto ditto

„ *tersa*; a, ædeagus in the obliquely caudad aspect; b, the same from the side.

„ *distincta*; a, ædeagus in the obliquely cephalad aspect; b, style in the interno-lateral aspect.

„ *bidentata*; a, ædeagus in the obliquely cephalad aspect; b, the same from the side.

„ *carri*: style in the interno-lateral aspect.

„ *diversa*; a, ædeagus in the sub-dorsal aspect; b, the same from the side.

N.B.—In the diagrams of the ædeagus in the lateral aspect one of the app. inf. is omitted.

Colesborne, Cheltenham:

June 9th, 1914.

TWO ADDITIONS TO THE BRITISH LIST OF *DIPTERA*.

BY A. E. J. CARTER.

1. *AMALOPIS SCHINERI*, Kol.

As far back as September, 1904, while collecting *Diptera* at Callander, Perthshire, I took a ♂ of this species. It has stood in my collection since as doubtful *littoralis*, and while going critically over the genus recently, I noticed that it could not be that insect. Like *littoralis* (Mg.), *schineri* is a yellow species, but is not quite so large, and the wings are clear, not yellow-tinted; the veins are dark, only the costa, Sc, and R1 being yellow. The whole of the head and antennæ are light yellow. There is no trace of a dorsal stripe on the abdomen, which is all light yellow, becoming darker at the apex. The hypopygium, too, is quite different, the forceps bearing at the apex numerous small black spines.

Dr. Grünberg (*Süsswasserfauna Deutschlands*, 1910) says that *schineri* is probably identical with *geniculata* (Mg.). Now the late Mr. Verrall, in his "List of Brit. *Tipulidæ*, &c." (published in this Magazine, 1886-88), gives *geniculata* as a "Reputed British species," with a reference to Stephens' Syst. Cat., ii, 245, and says that "the specimen in the British Museum is a small, true, *Amalopsis*." Mr. F. W. Edwards has very kindly looked up the old Collections of British *Diptera*, but is unable to trace Stephens' specimen, so that its identification still remains uncertain. The two species, from the descriptions, are certainly very closely allied, and I am sorry I have no specimen of *geniculata* to enable me to compare the hypopygia.

I have a ♀ specimen taken at Aberfoyle on September 11th, 1905, which agrees in all respects with the ♂ from Callander, but there is no discal cell in either wing. Herr Lundström, in his "Dipt. Finland" (1907) records a ♂ and ♀ of *schineri*, and says that the discal cell is present in the ♀, but not in the ♂! In my specimens, too, the radial cross-vein is absent in both wings of the ♀, and present in the right wing only of the ♂.

2. *ARGYRA AURICOLLIS*, Mg.

In the April number of this Magazine for 1905 (p. 83), the late Mr. Verrall, writing of the genus *Argyra*, said, "three or four more species ought to occur in Britain." Only one species has been added since, viz., *grata*, Lw. (*cf.* Ent. Mo. Mag., 1912, p. 57). I am glad now to be able to add another. My specimens—four ♂♂, and

6 ♀ ♀ —were taken at Polton, Midlothian, on Aug. 6th, 1906*, and were for a long time unnamed. From Dr. Grünberg's description (*loc. cit.*) I thought they might be *A. auricollis*, and going over the genus recently with Dr. Lundbeck's "Diptera Danica" (1912) the identification was confirmed. The species is a very distinct one, and is easily distinguished from *confinis*, Zett., the insect in our List which it most resembles, by the hind metatarsus being without long hairs in the ♂, and by the black coxæ in the ♀.

Monifieth: May, 1914.

THE OCCURRENCE OF A (NEW?) SPECIES OF *HESPERIA* IN EGYPT.

BY COL. N. MANDERS, A.M.S.

On March 29th, 1914, I captured in the desert near Cairo half-a-dozen specimens of a *Hesperia* new to me, one of which I subsequently submitted to Mr. Hamilton Druce for his opinion, suggesting that it was undescribed. He allows me to quote a portion of his letter: ". . . after a good deal of consideration I cannot advise you that the insect is new. I should say it was *H. (Pyrgus) evanida* Butler. I have examined the type in the British Museum. They have it also from Aden and Gebil Agageh, Soudan (H. N. Dunn, 1902). It is near *H. galba*, Fab., in fact, by Elwes and Edwards, and also by Mabille, it is given as a synonym of *galba*, but is probably quite distinct. . . . You may have a new species, but I should not care to name it on the slight perceptible differences from the type of *Pyrgus evanida*—the white spots in this latter are a little smaller than the specimen you send, also than in the Soudan examples referred to. . . . Perhaps you can get some one to work out the genitalia, which might prove something." Seitz, in his "Palæarctic Butterflies," p. 336, follows Elwes and Edwards, also Mabille, in giving *H. evanida* as a synonym of *H. galba*, but judging by his description and figure there is little doubt they are distinct.

I think it unlikely that my insect can be separated from *H. evanida*, occurring as this does at Aden and in the Soudan; at most it is likely to be a local race. I write the above somewhat hurriedly in order to prevent the synonymy of the *Hesperiidæ* being unnecessarily added to, which, if my information is correct, is likely to be the case.

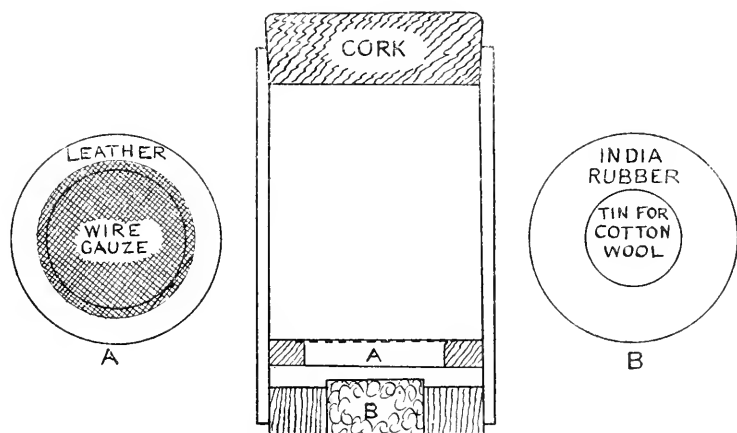
* Col. J. W. Yerbury caught two males of *A. auricollis*, Mg., at Llangammarch Wells (Brecknockshire) on July 23rd and 26th, 1913.—J. E. C.

I may add that the insect is partial to desert, away from cultivation, and that *Convolvulus lanatus* is almost certainly its food-plant, near which it is always to be found. I should describe it as locally common, but decidedly difficult to capture, as the insect has the habit of settling on the bare rock and sand, which its underside admirably matches. It has a swift, darting flight.

Cairo : May 13th, 1914.

A chloroform killing and relaxing bottle.—With reference to the note by Mr. G. V. Hudson in this Magazine last month (p. 94), on a "chloroform" killing bottle. I venture to send you herewith a sketch and description of a bottle, constructed by me, which I find answers all requirements very well. If I remember rightly its cost was about 1/6. The reason I use a layer of muslin or similar material over the brass wire gauze is that the latter is so rough that it might abrade the wings of the insects or their legs might get caught in it, and break when being removed; the leather ringed with gauze (A) can be of course pushed in as far as desired, and laurel leaves may be used for relaxing captures, by being placed between A and B.

The cork *must* be covered with chamois leather, as otherwise the edge of the glass will crumble the cork and make the insects dusty. This covering is easily affixed with glue or seccotine, and if the covered cork is put into the bottle to dry, the leather is thus stretched and kept taut whilst drying. In practice I shape the cork with a "shoulder" and cover the whole of it (except flat top) with the leather.



I find chloroform or ether much the best medium for killing *Hymenoptera*, and before I made this bottle I found it very troublesome (and risky) opening the bottle to recharge it, as the insects would immediately escape. The

bottle being flat on the top and bottom is also an advantage. The accompanying sketch, drawn to exactly half the actual size, will I hope make the construction of this killing bottle quite clear.

The glass used is that made for "sight feed lubricators," 4 in. \times 2½ in. = 2½ in. inside measurement—the glass being $\frac{1}{8}$ in. thick. For A, a ring was cut out of $\frac{1}{4}$ in. leather, 2½ in. diameter full, the width of the ring about $\frac{3}{8}$ in., a piece of brass wire gauze was then "blocked on"—in practice a piece of muslin or lino over the gauze is an advantage; this was then forced into the glass to, say 1 in. from end; below this, to hold the ether, a rubber valve (B) was cut, $\frac{1}{2}$ in. thick, 2½ in. diameter full, and a small tin, 1 in. diameter, $\frac{1}{4}$ in. deep, was let into the middle to hold the cotton wool; the base of the India rubber must project below the glass to enable it to be taken out when more ether has to be added, the advantage being that the bottle has not to be opened to put in the ether.—H. M. HALLETT, 64, Westbourne Road, Penarth: April 17th, 1914.

Note on Mysia oblongo-guttata, L., ab. *nigroguttata*, Dollm.—In 1912 I recorded (Ent. Mo. Mag., xlviii, p. 215), the breeding of *Syrphus torvus*, O.-S., from larvæ found on some young pines in this district. During the past month the same pines have been examined from time to time, and amongst the Syrphid larvæ and imaginal and larval Coccinellids to be seen attendant upon the very numerous Aphides (*Chermes*) I noticed, on different occasions, three freshly-emerged specimens of *Mysia oblongo-guttata*, L., one of which matched Dollman's figure of his ab. *nigroguttata*.* These immature examples were kept alive with living *Chermes* for a week or so, but all died without maturing. It will be found, I think, that this aberration will only be found amongst immature examples in which the whitish pigment has incompletely filled the usual dorsal guttæ of the elytra, and the absence of it causes a certain amount of discoloration or transparency, thus giving the appearance of dark spots. In one of the three examples mentioned the right elytron only has a single dark dorsal marking of this kind. Amongst the eight species of Coccinellids seen on these particular pines, *Erochomus 4-pustulatus* was as common as *Adalia bipunctata*.—G. C. CHAMPION, Horsell, Woking: June 9th, 1914.

Pygolampis bidentata, Goeze, in the New Forest.—Mr. W. West, of Lewisham, has shown me a specimen of this rare Hemipteron, which he had the good fortune to capture in the New Forest on May 22nd. This is one of the most interesting captures of recent years, as it provides the second recorded British example of a species which seemed to be hopelessly lost. As stated in Douglas and Scott's "British Hemiptera," the first specimen was taken by Mr. Thomas Marshall, of Leicester, about 30 years before the publication of that work, and therefore about 80 years ago from the present date. It was found in September under a piece of sandstone at Quatford, near Bridgnorth, Salop. Mr. West's specimen, which is a ♂, was taken by sweeping on the railway bank between Brockenhurst and Beaulieu Road Station. This insect

* Ent. Record, 1912, pl. II. The reference to the description (p. 53) is not included in the Special Index for that year, and the name therefore is likely to be overlooked.

is distributed over the greater part of the Continent, and its range extends into northern and central Asia, but it is always rare and, I believe, occurs merely sporadically. Very little is known of its habits. According to Fieber, it is found in dry, grassy, sunny places, but Amyot and Serville say that it occurs in forests. Some larvæ which I have lately received from India, of *Reduviidæ* belong to allied genera, have been thickly covered with sand and clay, and this seems to imply a burrowing habit; if *Pygolampis* has similar habits, its not having been met with during so long a series of years would be less inexplicable; such habits would also accord with the method of occurrence of the first specimen. Still, this is only conjecture. In this connexion it may be mentioned that the figures given of this species in both Saunders' "*Hemiptera-Heteroptera* of the British Islands," and Douglas and Scott's "*British Hemiptera*" are those of the ♀, which is curious, seeing that the original specimen is said to have been a ♂. There is some confusion also in the text of Douglas and Scott's work. The authors say that "according to Fieber," the abdomen of the ♀ ends with two obtuse plates: this is an error. Fieber's words, "*After gestutzt, in zwei stumpfe Lappen endend*," refer to the ♂ and not to the ♀, of which he says merely "*After Kegelförmig*." The description of the ♂ genital segments, moreover, is not reconcilable with the real form of those parts. Saunders, again, says, "I do not know the female," and yet this is the sex figured in his work. One would imagine, therefore, that the original specimen must have been really a ♀, though mistaken for the opposite sex.—E. A. BUTLER, 56, Cecile Park, Crouch End, N.: June 8th, 1914.

Vanessa antiopa in Berks.—While motoring through the Royal Military College ground at Sandhurst this afternoon, I saw what can only have been a specimen of the "Camberwell Beauty" (*Vanessa antiopa*). It flew—somewhat leisurely—for some distance in front of the car, at a height of about six feet from the ground. Seen from behind it looked almost black, but showed a purplish colour as we passed it. Momentarily forgetting where I was, I mentally put it down as a large female of *Hypolimnys bolina*—a common roadside butterfly in Ceylon. Sandhurst College is situated in the southernmost corner of Berkshire, at a point where three counties meet. It is quite possible that this same individual may have been observed and recorded in Berkshire, Hants, and Surrey, within the course of a few hours.—E. ERNEST GREEN, Camberley, Surrey: May 29th, 1914.

Reviews.

"ENTOMOLOGY, WITH SPECIAL REFERENCE TO ITS BIOLOGICAL AND ECONOMIC ASPECTS," by JUSTUS WATSON FOLSOM, Sc.D. (Harvard), second revised edition with 4 plates and 304 text-figures: pp. vi + 402: Philadelphia, P. Blakestones, Son & Co., 1913.

A second revised edition of this useful work will doubtless be appreciated by entomologists generally, more particularly by our American cousins, an entire

new chapter on the transmission of diseases by insects having been added in the present edition, as well as much new matter, some new illustrations, &c. It is of course mainly based upon American forms, and the commoner kinds are selected in order that the reader may easily use the text as a guide to personal observation. The author restricts his subject to the true Insecta, or Hexapoda, and he divides the contents of the book into 13 chapters—Classification, Anatomy and Physiology, Development, Adaptations of aquatic insects, Color and coloration, Adaptive coloration, Insects in relation to plants, Insects in relation to other animals, Transmission of diseases by insects, Interrelations of insects, Insect behaviour, Distribution, and Insects in relation to man. Of the 304 illustrations in the text many have been prepared by the author, and the others are taken from acknowledged sources. Plates I and II show the successive stages in the pupation and emergence of the milkweed butterfly, *Anosia pleurippus*; III gives the Faunal realms, after Sclater and Wallace; and IV illustrates the Life Zones of the United States, after Merriam. A copious bibliography (extending to 48 pages), including references up to 1913, is appended. The Chapter (XII) on Distribution is perhaps a little out of date, that of Sharp on the Coleoptera of the Hawaiian Islands (1885), quoted on pp. 304, 305, giving 428 species, whereas Perkins (1913), brings the number up to 1,288 for the same islands. The book is well edited throughout, though a startling misprint is to be found on p. 246, where the human flea is named *Culex irritans*!

“A TEXTBOOK OF MEDICAL ENTOMOLOGY,” by WALTER SCOTT PATTON, M.B., I.M.S., and FRANCIS WILLIAM CRAGG, M.D., I.M.S., F.E.S.: pp. xxxiii + 764, pls. 89: Christian Literature Society for India, London, Madras and Calcutta, 1913.

In reviewing a comprehensive work of this kind it is obviously impossible for us to give more than a general notice of its contents, dealing as it does with so many branches of entomology. The “Textbook,” as the authors state in their preface, is really a guide to the study of the relations between Arthropods and disease, rather than a text-book on entomology in the wide sense. It has been compiled to supply the requirements experienced by isolated medical and veterinary officers practising in the Tropics, who find it impossible to derive much information from the scattered literature they are able to obtain on the subject. The authors arrange their matter under twelve chapters: I. Entomology as a branch of preventive medicine, Zoological position of the blood-sucking *Arthropoda*; II–IV. The Order *Diptera*, the anatomy and physiology being dealt with in Chapter II; V. *Siphonaptera*, or Fleas; VI. The *Rhynchota*, or Bugs; VII. *Anoplura*, or Lice; VIII. Order *Acarina*: *Ixodidæ*, or Ticks; IX. The *Acarina*: *Acari*, or Mites; X. Sect. 1. The Order *Pentastomida*: *Linguatulidæ*, or Tongue Worms. Sect. 2. Order *Eucepoda*: *Cyclops*, or Water Fleas; XI. Laboratory Technique; XII. The Relations of *Arthropoda* to their Parasites. The sections on internal anatomy contain a large amount of original matter, the descriptions in nearly all cases having been written and the figures drawn from dissections specially made for the purpose. The external anatomy

of the insects and other Arthropods enumerated is not forgotten, the general classification of the different Orders being founded almost entirely on external structure. Bionomics, breeding habits, laboratory manipulation, methods of dissection, &c., are all discussed in turn, the Chapter (II) on the anatomy of *Diptera* serving as an introduction to insect morphology generally. Of the 89 plates, 52 are devoted to *Diptera*, 6 to *Siphonaptera*, 7 to *Rhynchota*, 6 to *Anoplura*, 15 to *Ixodida*, 2 to *Acari*, and 1 to *Pentastomida*. The Manual supplies, we are sure, a vast deal of information of the greatest use to dwellers in hot countries, where insect plagues abound. Residents on the plains of India may be pleased to note (*cf.* pp. 448, 449), that the pest known as the Jigger-flea, *Dermatophilus (Sarcopsylla) penetrans*, L., which has been introduced into Bombay and Karachi with infected sailors, has not yet succeeded in gaining a footing. Travellers wishing to take a copy of the "Manual" with them may perhaps object to the bulk and weight of the book, but a lighter paper could hardly have been used for the text or plates. Its price is 21/-.

"COMMON BRITISH BEETLES," by the REV. CHAS. A. HALL, F.R.M.S. "Peeps at Nature" series. With 16 plates, 8 coloured. London: Adam and Charles Black. 1914.

We have the pleasure of noticing yet another of the excellent little volumes of the "Peeps at Nature" series, the work now under consideration treating of the British *Coleoptera*. It is obvious that in the 88 pages of which the book consists, so extensive a subject as that of our native beetles can be dealt with only in the barest outline; but the author has succeeded in condensing a large amount of useful and interesting information respecting the Order in this small compass, aided by some excellent text figures and half-tone plates devoted mainly to structural detail. We could have wished, however, that in a work intended primarily for the beginner in the study of *Coleoptera*, a little more space had been allotted to the important details of collecting and preserving, the chapter devoted to this subject being decidedly "sketchy." The eight "three-colour" plates, comprising figures of nearly 150 species, are very good and clear, especially those made from drawings by Mr. C. F. Newall; the two plates made direct from the specimens are not quite so satisfactory, as beetles do not lend themselves nearly so well as *Lepidoptera* to this method of illustration. On the whole, this little book forms a very useful introduction to the study of our beetle fauna, and fully sustains the high standard of excellence of the "Peeps at Nature" series.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: Meeting held at the Royal Institution, Colquitt Street, Liverpool, March 16th, 1914.—Mr. R. WILDING, President, in the Chair.

Professor Robert Newstead, M.Sc., F.R.S., gave a lecture entitled "Some Observations on the Natural History of Nyasaland." The lecture, which dealt

with the Professor's own experiences during an expedition undertaken to discover the breeding habits of the *Glossinidæ*, was most interesting, especially the account of the finding of the first pupa of *Glossina morsitans*, and of the connection between this fly and sleeping sickness and "ingana." A capital photograph shown on the screen recorded this historic event.

Mr. A. W. Hughes exhibited *Phigalia pilosaria*, including a pale olive unicolorous variety, from Eastham, also *Hybernica leucophearia* and var. *marmorinaria* from the same locality; he further reported that *Nyssia zonaria* had been plentiful at Crosby.

April 20th, 1914.—Meeting held at the Royal Institution, Colquitt Street, Liverpool. The President in the Chair.

Mr. A. W. Boyd, M.A., F.E.S., gave an address entitled "The Natural History of Rostherne Mere." Having described the physical characters of the Mere and the probable causes of its formation, the nature of the surrounding land and its flora, both arboreal and herbaceous, he dealt exhaustively with the birds known to frequent the Mere and finally the insects of the locality were discussed. Several very interesting records have been made, viz., *Acidalia circumscripta*, a fine female specimen in 1913; *Ornix avellanella*, *Laverna raschkiella*, this species being an addition to the Lancashire and Cheshire county list, and *Nepticula argentipedella*. Mr. Boyd exhibited the *Lepidoptera* catalogue for the locality, and was congratulated upon having made such good use of the opportunity of collecting upon the private ground surrounding the Mere. At the close of the address, Mr. Boyd was heartily thanked for his kindness in coming from Manchester to give his experiences.

Mr. W. Mansbridge exhibited several xanthic varieties of *Fidonia atomaria* bred among a large number of the species from Burnley females. The xanthism was confined to the hind-wings, and in most of the specimens it affected only one of the hind-wings; in two instances, however, both the secondaries were nearly white all over. Mr. F. N. Pierce, generic types of the British *Geometridæ*, arranged according to their affinities as indicated by the genitalia.—WM. MANSBRIDGE, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: Thursday, May 14th, 1914.—Mr. B. H. SMITH, B.A., F.E.S., President, in the Chair.

Mr. B. S. Williams read a paper on "The *Thysanoptera*," and showed lantern slides and specimens under the microscope in illustration.

Mr. Hocking exhibited branches of the common furze from Danbury Common which had been covered by a dirty white web and killed by an attack of countless numbers of *Tetranychus lintearius*, an extremely small mite which congregated in reddish brown dust-like patches. Mr. Step had seen a similar attack of a mite on lime at Mickleham. Mr. B. Adkin, aberrations of *Colias edusa*, including a ♂ with very pale marginal bands, one of half the usual size and a yellowish form of the var. *helice*.

THE GEOGRAPHICAL DISTRIBUTION OF *DANAIDA PLEXIPPUS*, L.
(*DANAIS ARCHIPPUS*, F.) WITH ESPECIAL REFERENCE
TO ITS RECENT MIGRATIONS.

BY JAMES J. WALKER, M.A., R.N., F.L.S.

In a former volume of this Magazine (Ent. Mo. Mag., vol. XXII, pp. 217-224), shortly after the capture of a considerable number of specimens of *Danaida plexippus* in Britain had been recorded in our current Entomological periodicals, I was induced to publish some notes on this most interesting butterfly embodying my observations made during a voyage in H.M.S. "Kingfisher" in the Eastern and Central Pacific Ocean, and to speculate on the probable causes of the rapid spread of the species at that time taking place across the warmer parts of that ocean and the Atlantic. In the long interval that has elapsed since this paper was written, two more voyages to Australia and the Western Pacific, where the butterfly has now presumably established itself as a permanent member of the insect fauna of these regions, have enabled me to add very materially to my experiences on the subject of the life-history and the wanderings of *D. plexippus*. I therefore venture to submit to the readers of this Magazine a summary of the history of the recent wonderful extension of its geographical range, in the hope that a useful purpose will be served in bringing together the scattered records of many observers during the last half-century or more, and that these records will prove to be of interest to Entomologists in general.

Although up to a very recent date *Danaida plexippus*—to give the butterfly its most recent generic name as adopted by Dr. Karl Jordan and Prof. E. B. Poulton—has been regarded as an undoubted native of the New World, the evidence brought forward by the last-named distinguished Entomologist (Trans. Ent. Soc. Lond., 1908, pp. 449-452: Charles Darwin and the Origin of Species, pp. 152-164, 204 [1909]) appears, to myself at any rate, to be conclusive that so far from this being the case, it is really "a member of an Old World genus that has invaded the New." Its striking dissimilarity from all but a very few (obviously allied) forms of the multitude of American Danaine butterflies, and its equally striking resemblance in all its stages to the widely distributed and abundant Oriental *D. genutia*, Cram., had, it is true, not escaped notice previous to the appearance of Prof. Poulton's paper; but I cannot do better than to quote the learned Professor's own words in his masterly essay on "Mimicry in North American Butterflies" (Darwin and the Origin of Species, pp. 159-160). "The suggestion

might perhaps be made that the New World forms of *Danaida* are the more ancestral, and that those of the Old World have been derived from them by migration westward. There is no reason for believing that the Danaidas of either geographical area possess a more primitive structure than those of the other; we are therefore driven to consult other lines of evidence. The following comparisons clearly indicate that *Danaida* is an Old World genus which has invaded America at no very remote period:—(1) the far larger number of the Old World forms and the greater degree of specialization by which some of them are distinguished; (2) the place of *Danaida* as one out of a number of nearly related genera making up the *Danaini*, a large and dominant Old World group, *per contra* its isolated position in the New World; (3) the highly developed and complex mimetic relationships of the Old World Danaidas." Again (l.c., p. 162), "There can be little doubt that *D. plexippus* invaded America by way of the north, probably following the line of the Aleutian Islands. In North America it possesses an astonishing distribution for a member of so tropical a group, ranging immensely further north than any Danaïne in the world. Furthermore *D. genutia*, the probable representative of its Old World ancestor, extends far beyond the tropics into Western and Central China. A study of the distribution of the Asclepiad food-plants on the eastern coast of Asia might perhaps throw light on the problem." Further (l.c., p. 163), "It is probable that both the American Danaidas as they pressed southwards were 'held up' for a considerable time at the northern borders of the Neotropical Region, unable at first to penetrate that crowded area. Finally they burst their way through, and are now abundant throughout all the warmer parts of the region, the forms of *plexippus* extending further into the temperate south, just as in the Northern Hemisphere they range further north than those of *bernice*. We are made to realize the recent date of the invasion of South America when we remember that nowhere else in the world do Danaïne butterflies of equal abundance range through a crowded area without producing any effect on any member of the Lepidopterous fauna, or without themselves being affected thereby."

That the wandering instinct which in all probability carried the ancestor of *D. plexippus* in past ages from the Old World to the New still survives in full strength in its present-day descendant, is evident from its well-known migratory habits in North America, well summarized by the late Mr. J. W. Tutt in his admirable series of papers "Migration and Dispersal of Insects" (Ent. Record, 1900, pp. 182-6,

206-9). But as he goes on to say (l.c., p. 236), "Whatever interest may attach to what we may term the internal migrations of *Anosia archippus* within the Nearctic region, much greater interest is felt in its movements to distant parts of the world." It is the history of these movements that I now proceed to consider.

THE WESTWARD MIGRATION OF *DANAIDA PLEXIPPUS*.

I. NEW ZEALAND.

It is not a little singular that the first definite record of the occurrence of *D. plexippus* outside the American Continent was from so remote a locality as the North Island of New Zealand, at about the time when it first became a British colony.

In the "Transactions of the New Zealand Institute," vol. VI, pp. 183-6 (1874), Mr. R. W. Fereday published an interesting paper "Observations on the Occurrence of a Butterfly new to New Zealand," he having received a specimen of "a large handsome butterfly of the genus *Danais*," captured by Mr. F. H. Meinertzhagen at Waimarama, Hawke Bay, N.I., and identified as "*Danais erippus*" from a New South Wales specimen in the Canterbury Museum, Christchurch, sent by Mr. C. French—the insect having by that time established itself in Australia. Mr. Fereday, who in his paper adopts the Cramerian name *berenice* for the insect in question, thus proceeds (l.c., p. 183), "From Dr. Hector I have also received a specimen of this butterfly, taken last summer at Hokitika (west coast of South Island), where he saw it in great abundance; and since the capture of the first, Mr. Meinertzhagen has taken several more specimens at Waimarama. . . . He informs me that wherever he has seen the butterfly it has been flying high, but not swiftly, in sunny sheltered places among trees, and settling on them. He also saw it travelling fast over the country along the coast. The first he saw early in November, and the last he took the first week in April. All the Maories to whom he showed the butterfly said they knew it, and the old Maories say it is called 'Kākāhū,' and is in some years very plentiful. The caterpillar, they tell him, was very plentiful this year, and feeds on the pollen of the gourd which they grow in that part of the country (Hawke Bay). *They are unanimous in saying that the butterfly was there before any white man came*" (the italics are my own), "and the Rev. W. Colenso of Hawke Bay told Mr. Meinertzhagen that he saw it many years ago."

Mr. Meinertzhagen also obtained from his neighbour, Mr. Nairn, a coloured sketch made from memory, but clearly recognisable from

the description given as that of the larva of *D. plexippus*; also three pupæ "short and stumpy, of a pale green colour and dotted with gold on the edge which covers the wings. The Maori to whom he showed them recognised them as the pupæ of the *Danaïs*. Unfortunately the rats got at them and destroyed them" These larvæ were found on "the *Gomphocarpus ovata*, one of the milk-producing plants, and a native of the Cape of Good Hope."

In the same periodical for 1877 (Tr. N. Z. I., vol. X, pp. 276-280) appears an interesting account by the Rev. W. Colenso of his breeding "*Danaïs berenice*" from larvæ found feeding on some "cotton-plants" grown from seed at Meeanee, Hawke Bay. This paper elicited a letter, under date February 17th, 1878, to Mr. Colenso from Mr. F. W. C. Sturm, which appears in full in Tr. N. Z. I., vol. XI, p. 305, and is of very great interest as fixing a fairly definite date when *D. plexippus* first came under the notice of a competent observer in New Zealand. Mr. Sturm thus writes—"In regard to the butterfly, *Danaïs berenice*, or a closely allied species (as per your paper on the same) the first time I saw it was at the Reinga, up the Wairoa River in Hawke Bay, in December, 1840, or January, 1841. In 1848 I captured a number at the Waiau, a tributary to the Wairoa; I cannot recollect how many, but it must have been eight or nine at least. Again, in 1861, I captured three on the Rangatikei River one of which I have still in my collection. Four years back I saw three or four in my garden here and two years ago there was a great number in my gardens, always keeping about the Lombardy poplars and *Houheria populnea*. I certainly believe the butterfly to be indigenous and not introduced; and my observations of it fully coincide with yours that while in certain years it is plentiful, in other years it is not to be seen."

Unless we accept as true the statement made by the Maoris to Mr. Meinertzhagen "that the butterfly was there before any white men came," which may point to a still earlier invasion of New Zealand by *D. plexippus*, Mr. Sturm's record given above is, as far as I can ascertain, the first indication of the great migrations of the insect.

In more recent years, although *D. plexippus* has been several times recorded in New Zealand, mainly from the neighbourhood of Cook's Straits (Hudson, New Zealand Moths and Butterflies, pp. 102-3) it seems except in one instance always to have occurred sparingly or singly, and would appear to be barely, if at all, holding its own in the Islands. This exception was at Wanganui (N. I.) in 1894, when

DESIDERATA.

I am at present engaged in working out the life-history of *Xestobium tessellatum*, an insect that has done a great deal of damage to the roof of Westminster Hall. As the matter is one of great interest to the public, I should be very grateful for any assistance; living beetles or affected timber being required for investigation.—JAMES W. MUNRO, Imperial College of Science and Technology, S. Kensington, S.W.

Young German would like to find an Englishman who will accompany him on his Entomological excursions through the country. Please give terms, R. SCHIESSL, Sulzbach, Oberpfalz, Bavaria, Germany.

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THE MACROLEPIDOPTERA OF THE WORLD:

A BOOK OF REFERENCE AND IDENTIFICATION.

EDITED BY ADALBERT SEITZ, Ph.D., ETC.

In collaboration with Dr. C. AURIVILLIUS (Stockholm), H. FRUHSTORFER (Geneva), Dr. K. GRUENBERG (Berlin), R. HAENSCH (Berlin), A. JANET (Paris), Dr. K. JORDAN (Tring), L. B. PROUT (London), Hon. L. W. ROTHCHILD (Tring), W. WARREN (Tring), Dr. E. STRAND (Berlin), G. WEYMER (Elberfeld), and many other contributors.

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Mr. P. A. Marshall recorded it (Tr. N. Z. I., vol. XXVIII, p. 313) as "breeding in hundreds in Wanganui on plants of a species of *Gomphocarpus* in gardens, but not appearing the following summer." During the thirteen months, in 1901 and 1902, that I was continuously in New Zealand, I never had the good fortune to see a specimen on the wing, and my friend Mr. G. V. Hudson regarded it as distinctly a rarity in the Islands. *Gomphocarpus fruticosus*, R. Br. (*Asclepiadææ*), the ordinary food of the larva at Sydney, is sometimes grown in New Zealand gardens under the name of the "cotton-plant," from the large seed-capsules full of white cottony down enveloping the minute seeds; and the West Indian *Asclepias nivea*, L., is recorded as "an escape from gardens near Auckland" (Cheeseman, Tr. N. Z. I., vol. XV, p. 287), but neither of these plants appear to have become naturalized to anything like the same extent as is the case with the first-named in Australia at the present time.

II. THE CENTRAL AND NORTH PACIFIC ISLANDS.

My own observations on the extension of the range of *Danaïda plexippus* to the Marquesas, Society, Cook, Hervey, and other island groups in mid-Pacific, as well as those of Mr. G. F. Mathew in the islands further to the west in that ocean, which appeared in my former paper in this Magazine (l.c., pp. 219, 220, 224), have been embodied by Dr. S. H. Scudder in the admirable history of the butterfly in his monumental work, "The Butterflies of the Eastern United States and Canada." (Cambridge, Mass., 1889). The section entitled "Commercial Extension in Recent Years" (vol. I, p. 730 *et seq.*), deals with the question of its range over the Pacific Islands in so thorough and interesting a manner, that I make no apology for quoting it almost in full, though, as will be seen later on, I am by no means in complete agreement with some of his suggestions relative to the "means of dispersal."

"Among the most interesting points in the distribution of this butterfly is the fact that within 30 years or a little more it has begun to invade so many regions of the world as to make one think at first blush that it may some day vie with *Vanessa cardui* in cosmopolitan character. The facts concerning its exotic distribution, so far as I have been able to gather them, are as follows: -It first reached the Hawaiian Islands, fully two thousand miles from America, some time not far from 1845 to 1850. At any rate we have the direct statement of Dr. Luther H. Gulick who was born upon the islands, that in 1852, after eleven

years absence, he returned to the islands, and his brother drew his attention to the fact that *Asclepias* had been introduced during his absence, and had already become a troublesome weed; that his brother had noticed that where the milk weed appeared, there also the *Anosia* made its advent, a butterfly unknown until after the milk weed had been introduced. We next find it in 1857 as far away as the Island of Ponape (Ascension), one of the Caroline Islands in Micronesia, a distance of another two thousand miles or so from the Hawaiian Islands. This fact we also owe to Dr. Gulick's personal testimony. He was for some time a resident of Ponape, and the butterfly was first seen by him in the year mentioned, not long after he had discovered several young milk weeds, which had sprung up in earth in which various other plants had been brought from the Hawaiian Islands in a Wardian case. The plants were brought in a missionary vessel which sailed from Honolulu, and on its way to Ponape touched only at Apaiang of the Gilbert Islands and Ebon of the Marshall group, both low coral atolls, and at Kusaie, which is of basaltic formation and richly clothed with verdure, but where the butterfly did not then occur. It is evidently impossible that in a voyage consisting in the whole of fifty-four days, the insect in any stage or stages could have been transported in the Wardian case itself, for it easily undergoes all its transformations in warm regions in a month or five weeks at most. If the butterflies were introduced at that time, as there is every reason to believe from Dr. Gulick's accounts, there seems no other supposition possible than that an impregnated female flew into the hold of the vessel while lading at Honolulu, and was carried perforce to Ponape, or perhaps a pair of butterflies. It would certainly be absurd to suppose that a gravid female could have flown over the two or three thousand miles of ocean, and in addition have appeared in Ascension Island almost simultaneously with a few plants of *Asclepias*. As the butterflies pass the entire winter in hibernation, and then lay eggs in the spring, there is nothing in any way surprising in Dr. Gulick's statements, unless it be impossible for an impregnated female to live in enforced hibernation a couple of months without laying, when it would be necessary to suppose a pair to have been transported, which would of course be more extraordinary.

“Granting our explanation to be just, it is highly probable that it was from this single ancestor, or pair, that the swarms, which have already now spread over the entire South Seas, in many of which it is the commonest butterfly known, have sprung. Our knowledge of the

period and extent of this later distribution we owe largely to Professor Semper,* who states that the butterfly was first seen in 1863 by Captain Rachan, one of numerous collectors of the Museum Godeffroy on the islands of the Tonga or Friendly group, again nearly 2,000 miles from Ponape. The first specimen actually obtained was secured in 1866 on Niuaufau, one of the islands of this group, and in the same year larvæ were discovered on *Asclepias curassavica*, a plant now spread quite as far as the Anosia. We now begin to be able to record in part the rapidity of its spread; for it was first seen in Tutuilla, one of the islands of the neighbouring Samoan group, in 1867, but upon Upolu and Savaii, islands of the same Samoan group, distant at the nearest some fifty miles, not until 1869. Yet in Upolu it became one of the commonest butterflies in 1870. It was not until 1868 that it was discovered at Tongabalu (*sic*), one of the southern of the Tonga Islands, but in the same year it was seen in the open sea five hundred nautical miles to the south-east. In 1869 it had appeared at Roratonga, one of the Hervey Islands, five hundred miles or more away. In 1870 to 1872 it was found on Huahine and Tabiti, of the Society Islands, again five hundred miles or more distant. So far the account of Professor Semper. But Mr. James J. Walker, who sailed in the South Seas in 1883 and found Anosia nearly everywhere one of the commonest butterflies, states that he was informed at the Marquesas Islands, which lie to the north-east of the Society Islands, again at a distance of some five hundred miles, by a Roman Catholic missionary residing there forty years, that he distinctly remembered seeing the first specimen there about 1860; it should be noted that the Marquesas Islands are nearly as distant in a south-easterly direction from the Hawaiian Islands as the Carolines are to the south-west. Mr. Walker also found the butterfly on the Hervey and Society Islands, and at Oparo, one of the Andaman (*sic*!) group, in 28° south latitude, though it had not then reached Pitcairn Island, which lies much farther east and somewhat farther north. These statistics indicate its movements from the Caroline Islands in an easterly and south-easterly direction, but it has also left its mark by the way in a southward extension from this route of travel. It reached Lord Howe's Islands in 1870, Clarence River on the opposite coast of Australia in 1871, Melbourne in 1872, and has now extended to Celebes, and, according to Kirby, to Java.

* G. Semper on the appearance of *Danaüs archippus* in the South Sea Islands, Australia and Celebes: Journ. Mus. Godeffroy, II, pp. 117-119 (1873).

"It thus appears that it now possesses a territory in the Pacific Ocean of at least 110° of longitude and 65° of latitude. But this is by no means all. It has moved also in some strange way in the opposite direction from the American Continent."

In all these widely separated island-groups *Danaiida plexippus* appears to have become one of the commonest butterflies in a very few years after its arrival, and the following passage from that delightful narrative of Pacific voyaging, "South Sea Bubbles," shows that not only was this the case in one at least of these groups, but that its American origin was there a matter of common knowledge. Writing of Samoa in 1870, one of the authors says:—"Coming down from our ravine, we pass through a wilderness of imported plants and shrubs, flourishing in wild luxuriance. That red and brown flower, which makes such pretty wreaths for the girls' heads, and the down from whose pods is so dangerous to the eyes, is an importation, Heaven knows how, from America; and not only is it an importation, but it has imported its own butterfly with it, that splendid red and brown fellow who looks as if he had got half his colour from his native flower." More than twenty years after this date, Mrs. Jane Fraser (Ent. Mo. Mag., vol. XXX, p. 149) notes *D. plexippus* as "one of the first butterflies to be noticed in the Navigator (Samoa) Islands" and in Upolu it was very much at home, but was decidedly more numerous at a few hundred feet above the sea.

I am not aware of any very recent records from the Central Pacific, but I think there can be no reasonable doubt that both the butterfly and its most usual food-plant, are firmly and permanently established in the larger groups of islands. But as regards Micronesia, which consists with very few exceptions of coral atolls of no great size, and elevated only a few feet above the ocean level, it would appear that there *D. plexippus* exists on a very precarious tenure, and perhaps not at all as a permanent resident; though, as already stated, Ponape in the Carolines has been suggested by Dr. Scudder as one of the chief centres of distribution in the Pacific. Mr. Mathew (Ent. Mo. Mag., vol. XXII, p. 220) did not meet with it in his cruise among the Gilbert, Ellice, Marshall, and Caroline Islands, though he saw *Asclepias* in the last-named group; neither is it included in the list of butterflies collected by the Rev. S. J. Whitmee in the Ellice Islands (A. G. Butler, P.Z.S., 1878, pp. 296-7), nor in those found by Mr. C. M. Woodford in Nukufetau, Ellice Is., Tarawa and Tapetewea, Gilbert Is. (A. G. Butler, Ann. Mag. Nat. Hist. [5], XV, pp. 296-7). Again, in the small list of

insects collected by Mr. C. Hedley during the coral-boring expedition in 1896 to Funafuti in the Ellice Group (Rainbow, *Memoirs Austr. Museum*, III, part ii, p. 95), there is no mention of the occurrence of *D. plexippus*, nor is *Asclepias curassavica* included among the few plants noticed by him or by subsequent visitors as growing on that atoll. It is quite possible that the conditions of these small islands do not favour the growth of the plant.

III. THE WESTERN PACIFIC, AUSTRALIA, THE MALAY ARCHIPELAGO, &c.

The very interesting records of *Danaiida plexippus* in the Western Pacific Islands, by my friend Paymaster-in-Chief G. F. Mathew, R.N., nearly thirty years ago, have been included in my previous paper (*Ent. Mo. Mag.*, vol. XXII, pp. 220, 221), and have been supplemented by my own observations made in 1900 in New Caledonia, the New Hebrides, and the Loyalty Islands (*l. c.*, vol. XXXVIII, p. 192, *et seq.*). I have, however, been unable to collect any information as to the date at which it first made its appearance in any of these island groups; but it probably reached this region very shortly after its arrival in the Central Pacific.

In the "Field" of April 16th, 1881 (p. 539), Mr. E. L. Layard gives the following very interesting notes on the butterfly and its food-plant as observed by him at Teremta, a French military post on the west side of New Caledonia, some sixty miles north of Nouméa—"A burst of sunshine and we are out on a sandy flat, also evidently subject to frequent overflow of the river . . . but now covered with a luxuriant growth of the pest-weed of that country, the "gendarmes plant" as it is called, second only to the *Lantana* in its powers of expansion and destructiveness. . . . Millions of huge red-brown butterflies sported among the flowers of this useless plant, their larvæ devouring the leaves in spite of the acrid milky sap they contain. It is strange that both plant and insect are introductions, and not natives of the colony. The former, an Asclepiad, is said to have been brought from Tahiti by a gendarme who had stuffed his mattress with the silky cotton of the pods. This he emptied out in his barracks near Nouméa, and the few chance seeds clinging to the cotton, finding a suitable soil, established themselves, and have thence spread all over the land. The butterfly (*Danais*) is an American insect that appeared suddenly in Australia. It was apparently introduced here in a case of plants by Père Montrouzier, the celebrated

French naturalist, from thence, and has followed the plant in its migrations."

It is just possible that in this instance the butterfly was introduced into New Caledonia by the worthy Father with a view to its utility in keeping down a noxious weed; indeed, the ravages of the larva, as suggested by Mr. Layard, would appear a few years later to have so far destroyed the *Asclepias* as to cause a noteworthy reduction in the numbers of the butterfly through want of food (*cf.* Ent. Mo. Mag., vol. XXII, p. 220). Certainly when I visited New Caledonia and the Loyalty Islands in 1900 (*l.c.*, vol. XXXVIII, pp. 192, 201), the *Danaiida* and the *Asclepias*, though both plentiful enough, could not have been called superabundant. However, I prefer to think that the insect found its way to New Caledonia, as to the other localities in the Pacific Ocean, without definite human aid.

As early as 1870 we find the *Danaiida* recorded in considerable numbers at Brisbane, Queensland, by Mr. W. H. Miskin (Ent. Mo. Mag., vol. VIII, p. 17). At about the same time the butterfly was found at Rockingham Bay, on the coast, 1500 miles to the north of Brisbane. Prof. F. McCoy, Director of the National Museum of Victoria, gives a very interesting account of the sudden appearance of *D. plexippus* at Melbourne (Ann. and Mag. Nat. Hist. (4), XI, pp. 440-1) (1893), which I quote at some length:—"This fine butterfly was sent to me about December, 1870, from Lord Howe's Island, on the north-east coast of Australia, by a collector for the Museum, who was wrecked there; but as I had never seen it in any of the North-Australian, or Queensland, or New-South-Wales collections, and knew it to be an inhabitant of the Southern States of America, I suspected that the specimen might have been obtained from some collector on board some American ship in those seas. A few months after, a specimen was sent to me by a collector established on the Clarence River, in New South Wales, as something he had not seen before, and another friend, fond of insects, travelling in the far north of the continent, also sent me an example as something strange. As there were no exact accounts of the actual capture of these specimens, I fancied they all might have come from some one American source, and paid little attention to the matter. On the last Sunday in April last (1872), or about a year and five months after, I was walking in my garden at Brighton, a place on the sea-shore about eight miles south of Melbourne, and was astonished to see that a larger butterfly with a more bat-like flight than any inhabitant of the colony, which

attracted my attention among the flower-buds, was the *Danais archippus*; and presently the two sexes were seen. Being Sunday, they escaped; but next morning, going through the grounds of the University on the north side of Melbourne. . . . I observed two more before me, and on going to my room found my collector in a great state of excitement at having caught one in my botanic garden in the University grounds, and having the previous day seen one five miles south of Brighton. So that the insect had made its appearance for the first time in the colony simultaneously at places fourteen miles apart, and with no community of character or vegetation. On the three following Sundays I saw two or three specimens in fine condition, which could not, therefore, have been those seen at first; and last week (end of March, 1873), I saw some in the street leading to the University, and on the same day the collector came across them . . . at the opposite side of the city . . . This sudden American invasion of the whole continent seems worth recording."

It is evident that New South Wales was reached by *D. plexippus* very soon after its first arrival in Australia. Mr. G. A. Waterhouse states (Proc. Linn. Soc. N. S. Wales, 1897, p. 286) that "since 1870, it has been a very familiar insect about Sydney." An indication of an even earlier arrival is, however, given by Mr. A. S. Olliff on p. 10 of his little work on "Australian Butterflies" (Sydney, 1889). He says: "It is generally thought that 1870 was the first year of its appearance here (at Sydney), but Dr. Ramsay of the Australian Museum informs me that he is positive that he saw the species at Ashfield, near Sydney, as early as the year 1856. Observers are so scattered, that the exact date of the insect's arrival can only be a matter of conjecture. It is evident, however, that the species did not obtain a firm foot-hold until 1870 or thereabouts." It was the very first butterfly that I saw on the wing at Sydney, in February, 1900, and on all my visits to that port I found it in more or less abundance. Here I may record an unpremeditated experiment which clearly demonstrates the extreme unpalatability of the insect in the larva state. One day in May, 1903, while my friend Mr. H. J. Carter and I were lunching in the garden of the hotel at Narrabeen, a few miles north of Sydney Harbour, a small pet monkey picked my pocket and made off with a pill-box containing two full-fed larvæ of *D. plexippus*. She at once proceeded to devour the tempting-looking caterpillars, and it will be long before I forget the expression of supreme disgust on the face of the little creature when she realised the flavour of her supposed prize,

nor the ludicrous haste with which she rejected the nauseous mouthful, even rubbing her tongue vigorously on the grass for some time to get rid of the taste.

A large portion of the Australian Continent is apparently as yet unoccupied by *D. plexippus*, as during the voyages of H.M.S. "Penguin" to the North-West Coast in 1890 and 1891 I did not observe it in any of the numerous localities visited by the ship between Port Darwin and Shark's Bay, nor had it at that period reached the more settled districts of Western Australia. Directly we entered the Malay Archipelago, however, the butterfly put in an appearance, and I have recorded it from Damma, Amboyna, and Ternate (Ent. Mo. Mag., vol. XXIX, pp. 25, 27, 30). At Damma I had another convincing demonstration of the insect's inedibility, this time of the imago. I had lain down to rest under a shady tree one very hot afternoon, and on waking after a short doze, was horrified to find that a swarm of black ants had found their way into my cork helmet, pinned full of my day's catch of butterflies, and that nearly all its contents were reduced to rags. The sole exceptions to the general destruction were one or two *Euplœas* and the single *Danaida plexippus*, a large ♀, that I had seen on the island. These the ants had left absolutely untouched.

In the Philippine Islands, as well as at Hong Kong, I failed to meet with *D. plexippus*, though in the latter island I saw plenty of *Asclepias curassavica*, which is there a favourite food-plant of the larva of *D. chrysippus*. On the evidence of a single specimen in the Oxford University Museum labelled "Hong Kong 1896-7 ex Swinhoe," it would seem to have found its way there since my visit. Among further records from the Eastern Archipelago, I may notice that Dr. W. J. Holland, in the "Twenty-fourth Annual Report of the Entomological Society of Ontario" writing in 1893 "On the Occurrence of *Danaïs plexippus* in consignments of Eastern *Lepidoptera*," remarks: "One of the sendings was from Borneo, the other from Java. We shall soon hear of its domestication on the mainland of Asia, and it will probably spread all over China and Japan." Yet more interesting, as being in all probability the farthest record of the insect in a westerly direction from America, is that by Mr. L. de Nicéville and Hofrath Dr. L. Martin in "A List of the Butterflies of Sumatra" (Journal, Royal Asiatic Soc., Bengal, vol. LXIV, pp. 366-7)—"Mr. W. F. Kirby has already recorded it from Java. I now for the first time, I believe, record it from North Borneo, the

late Mr. W. Davison having sent me a male specimen from that island Furthermore, the late Mr. E. F. T. Atkinson in 1889 presented a female specimen of this species to the Indian Museum, Calcutta, which was captured on April 19th, 1889, by Mr. C. White, the chief officer of the P. and O. S.S. "Ravenna," in the Strait of Malacca (which is, at the point where the butterfly was caught, only a few miles broad). It is therefore not at all improbable that the butterfly flew from either the adjacent island of Sumatra or the Asiatic mainland." In the same paragraph the authors remark that—"In Part II of a new edition of Morris's History of British Butterflies, p. 72, it is stated to have been found in the Andaman Islands." This record, if correct, would carry the butterfly still farther on its westward course; but it is quite possible that in this case the common Oriental *D. genutia* may have been mistaken for *D. plexippus*; or it may even be that the unaccountable erratum of Dr. Scudder (l.c., p. 732) in referring Oparo in the Central South Pacific to the "Andaman group," has given rise to the statement.

In January, 1904, when on my voyage home from Australia in H.M.S. "Diadem," the ship called at the Cocos-Keeling Islands (lat. 12° S., long. 97° E.). During the short time that I was on shore there, one of the two species of butterflies seen by me on the wing was *Danaiida chrysippus*, a certain indication of the presence of an *Asclepius*, though I did not actually see the plant growing. In his list of Keeling Atoll plants made in 1879 (A Naturalist's Wanderings in the Eastern Archipelago, p. 43), Mr. H. O. Forbes includes *Asclepias curassavica*, and states (l.c., p. 31) that its flowers are "frequented by several moderately large diurnal species of *Lepidoptera*." The food-plant of *plexippus* is therefore ready for the butterfly, should it any time be blown to that remote atoll by one of the cyclones which are known to carry many other insects thither (cf. Forbes, l.c., pp. 30, 31). A long way further to the west and north, when passing through the Suez Canal in June, 1893, I saw *Asclepias curassavica* growing luxuriantly at Ismailia, and attended by numbers of *D. chrysippus*.

(To be continued).

HYGROPORA CUNCTANS, ER.: A GENUS AND SPECIES OF
STAPHYLINIDÆ NEW TO THE BRITISH LIST.

BY JAMES J. WALKER, M.A., R.N., F.L.S.

While searching for *Nanophyes gracilis* among its food-plant *Peplis portula* in a little damp spot on the open heath near Brockenhurst, in company with Dr. Sharp on June 24th last, I bottled a little active black Staphylinid which did not attract much attention at the time, but it proved on further examination to be quite unknown to both of us. Dr. Sharp has since taken a very few more specimens under similar conditions—one at least having been found on exactly the same spot as the first—and these have enabled him to identify the insect as *Hygropora (Oxygoda) cunctans*, Er., (Käf. Mark Brand., I, p. 349).

Kraatz (Ins. Deutschl., II, p. 132), whose description is good and unmistakeable, established the genus *Hygropora* for Erichson's insect, mainly on account of differences in the mouth-parts from those of *Oxygoda*. It was again described by Thomson (Öfv. Vet. Ac. Förh., 1855, p. 196) under the name of *Oxygoda curticolis*; and the genus *Pycnaræa* was subsequently established by him for its reception. (Skand. Col., III, p. 29). His description agrees better with the insect than that of Mulsant, though the latter was of opinion that Thomson's species could not be identical with the species Mulsant considered to be Erichson's *H. cunctans*. The figures by Jacquelin-Duval (Gen. des Coleop., II, pl. 7, fig. 34) and by Reitter (Faun. Germ., II, pl. 41, f. 20) are neither of them very satisfactory.

H. cunctans is recorded from Austria, Germany, and Northern Europe, but seems to be everywhere very rare. It may easily be distinguished from an *Oxygoda* by the heavier build, and the shorter penultimate segments of the abdomen, and it has a good deal of the general aspect of a small specimen of *Microglossa pulla*, Gyll. My example has a curious malformation of the antennæ, the penultimate joint of each being reduced to less than half the usual length, thus appearing excessively transverse, though otherwise these organs are normal.

I am greatly indebted to my friend Dr. Sharp for most of the above particulars and references respecting this very interesting addition to our Fauna.

Aorangi, Lonsdale Road,
Summertown, Oxford:

July 14th, 1914.

COLEOPTERA FROM SUTHERLAND FLOOD RUBBISH.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

In July, last year, when travelling across Sutherlandshire from Lairg to Tongue in the mail motor car, I kept a look-out when passing a river for any place where flood rubbish might accumulate. I noticed one such place where the River Tirry bent at a right angle close to a cottage. Fortunately the motor stopped a short distance farther on, and I had the opportunity of asking a man in a cart the name of the occupier and address of the cottage. Shortly after, I wrote to the latter explaining to him in detail how to gather the flood rubbish off the surface of the water when the river was in "full spate," and sending him a bag for it. It was not until May 9th of this year that he was able to obtain any, and it did not arrive here for several days as he was unable to send it off at once. It consisted almost entirely of long grass, with very little heather. The place where it was gathered is about four miles north of Lairg, and is about 400 feet above sea-level. I treated the flood rubbish, which arrived dry enough to sieve, by what is now my routine method. It is first shaken through a large sieve of about $\frac{3}{8}$ -in. mesh, a watch being kept for the larger *Carabidæ*, etc., in the coarse rubbish thrown away. In this way it is reduced to about one third of its original bulk. This residue is then very carefully examined in small quantities, about half a handful at a time. A sieve of $\frac{1}{16}$ -in. mesh is used, and two large, steep-sided basins.

As there are so few records of *Coleoptera* from Sutherland I think it worth while mentioning all the species—147 in number—found in the sack of rubbish. The majority are quite common and generally distributed species, and indeed there are very few purely northern forms. The most interesting captures are *Atheta britteni*, Joy, of which about 30 specimens were captured, and *Xantholinus scoticus*, Joy, which was quite common. The curious alutaceous surface on the head and thorax is quite distinct in all the specimens of the latter species, but varies to some extent. In two specimens in which it is less distinct, there is a tendency to very fine and diffuse punctuation on the disc of the thorax as in *X. ochraceus*, so that eventually *X. scoticus* may prove to be only a northern form of the latter species.

Notiophilus biguttatus, F.; *N. aquaticus*, L.; *N. palustris*, Duft.; *Elaphrus cupreus*, Duft.; *Loricera pilicornis*, F.; *Clivina fossor*, L.; *Dyschirius globosus*, Hbst.; *Bradycellus similis*, Dej.; *Harpalus latus*, L.; *Pterostichus nigrita*, F.; *P. diligens*, Stm.; *Amara lunicollis*, Schiödt; *A. communis*, Pz.; *Calathus cisteloides*, Pz.; *C. melanocephalus*, L. (the type form only); *Bembidium manner-*

heimi, Sahlb.; *Trechus minutus*, F.; *Patrobus excavatus*, Pk.; *Hydrobius picicrus*, Th.; *Anacæna globulus*, Pk.; *Helophorus viridicollis*, Steph.; *Limnebius truncatellus*, Thunb.; *Cercyon obsoletus*, Gyll.; *C. melanocephalus*, L.; *C. quisquilius*, L.; *C. pygmæus*, Ill.; *Megasternum boletophagum*, Marsh.; *Cryptopleurum atomarium*, Ol.; *Alcochara lanuginosa*, Grav.; *A. nitida*, Grav.; *Exaleochara morion*, Grav.; *Orypoda opaca*, Grav.; *O. edinensis*, Sharp; *O. umbrata*, Gyll.; *O. longiuscula*, Grav.; *O. exigua*, Er.; *Ocyusa incrassata*, Muls.; *Ocalea castanea*, Er.; *Drusilla canaliculata*, F.; *Atheta elongatula*, Grav.; *A. melanocera*, Th.; *A. obtusangula*, Joy; *A. clavipes*, Sharp; *A. tibialis*, Heer.; *A. vicina*, Steph.; *A. graminicola*, Grav.; *A. eremita*, Rye; *A. magniceps*, Sahlb.; *A. debilis*, Er.; *A. britteni*, Joy; *A. deformis*, Kr.; *A. circellaris*, Grav.; *A. analis*, Grav.; *A. indubia*, Shp.; *A. mortuorum*, Th.; *A. germana*, Sharp; *A. cauta*, Er.; *A. atramentaria*, Gyll.; *A. longicornis*, Grav.; *A. fungi*, Grav.; *Falagria sulcata*, Pk.; *Myllæna brevicornis*, Matt.; *Hypocyptus læviusculus*, Mann.; *Tachyporus obtusus*, L.; *T. chrysomelinus*, L.; *T. pusillus*, Grav.; *Tachinus rufipes*, De G.; *T. marginellus*, F.; *Megacronus analis*, Pk.; *Mycetoporus lepidus*, Grav.; *v. longulus*, Mann. (both forms equally common); *M. clavicornis*, Steph.; *M. splendidus*, Grav.; *Quedius molochinus*, Grav.; *Q. umbrinus*, Er.; *Q. scintillans*, Grav.; *Q. attenuatus*, Gyll.; *Q. boops*, Grav.; *Staphylinus erythropterus*, L.; *Ocypus cupreus*, Rossi; *Philonthus splendens*, F.; *P. laminatus*, Creutz.; *P. politus*, F.; *P. varius*, F. (type form only, very common); *P. trossulus*, Nord.; *Xantholinus scoticus*, Joy; *X. cribripennis*, Fauv.; *X. linearis*, Ol.; *Othius fulvipennis*, F.; *O. melanocephalus*, Grav.; *O. myrmecophilus*, Kies.; *Lathrobium fulvipenne*, Grav.; *L. brunripes*, F.; *L. terminatum*, Grav.; *Stenus guttula*, Müll.; *S. juno*, F.; *S. providus*, Er.; *S. speculator*, Lac.; *S. declaratus*, Er.; *S. impressus*, Germ.; *S. foveicollis*, Kr.; *S. latifrons*, Er.; *Platystethus arenarius*, Fourc.; *Oxytelus rugosus*, F.; *O. laqueatus*, Marsh.; *O. tetracarinatus*, Block; *Lesteva sicula*, Er.; *Acidota crenata*, F.; *Olophrum fuscum*, Grav.; *Homalium excavatum*, Steph.; *H. exiguum*, Gyll.; *Megarthus depressus*, Payk.; *Clambus armadillo*, De G.; *Agathidium lævigatum*, Er.; *Choleva angustata*, F.; *Scydmaenus collaris*, Müll.; *Pselaphus heisei*, Hbst.; *Bythinus bulbifer*, Reich.; *Trichopteryx atomaria*, De G.; *Ptilium kunzei*, Heer.; *Scymnus testaceus*, Mots.; *Hister neglectus*, Germ.; *Micropeplus porcatus*, Pk.; *Epuræa æstiva*, L.; *Simplocaria semistriata*, F.; *Parnus ernesti*, Ganglb.; *Aphodius fimetarius*, L.; *A. ater*, De G.; *A. lapponum*, Gyll.; *A. punctato-sulcatus*, Stm.; *A. depressus*, Kug.; *Cryptohypnus riparius*, F.; *Corymbites cupreus*, F.; *C. tessellatus*, F.; *Cyphon variabilis*, Thunb.; *C. punctipennis*, Sharp; *Chrysomela staphylæa*, L.; *Hydrothassa aucta*, F.; *Lochmæa suturalis*, Th.; *Haltica palustris*, Weise; *Longitarsus holsaticus*, L.; *L. luridus*, Scop.; *Chaetocnema hortensis*, Fourc.; *Otiorrhynchus maurus*, Gyll.; *O. picipes*, F.; *Barynotus schönherri*, Zett.

Bradfield, Berks:

July 1st, 1914.

A NEW BRITISH COCCID (*KUWANIA BRITANNICA*).

BY E. ERNEST GREEN, F.E.S.

Camberley, being a pine, birch, and heather country, I have been scrutinizing these plants, to note the Coccid fauna associated with them. I have, so far, found nothing on the pines. On the ling I have seen an occasional example of *Mytilaspis ulmi* (*pomorum*), and—on an ashy-leaved *Erica*—an *Eriococcus* which will probably prove to be *E. deroniensis* (hitherto recorded from Budleigh Salterton only).

The birches have produced *Aspidiotus ostreæformis*, *Pulvinaria vitis*, and an extremely interesting species that proves to be not only an addition to the British fauna, but also new to science. The discovery is the more interesting in that the insect belongs to a sub-family (*Margarodinæ*) of which there have hitherto been no representatives in the British Isles, and to a genus (*Kuwania*) of which the two known species occur in Japan and Ceylon respectively.

KUWANIA BRITANNICA, *sp. nov.*

Adult female (fig. 1) elongate, parallel-sided; cephalic extremity narrowest and tapering, posterior extremity rounded; abdomen considerably longer than head and thorax together.

Antennæ set close together on the extreme anterior margin. 8-jointed (fig. 2), or 9-jointed by subdivision of the apical joint (fig. 3); the basal joint large and broad, fleshy, with a mucronate chitinous plate on its under surface. Other joints narrower, rigid, subfusiform; 2nd and 3rd broader than long; 4th approximately as long as broad; others longer than broad, narrowing to the base; 5th, 6th, and 7th approximately equal; 8th much longer than preceding six, but rather shorter than the large basal joint. Sometimes the terminal joint has an incomplete division, bisecting it transversely (fig. 3). All the joints, except the 1st, with a circlet of stout setæ at their distal extremities.

Eyes conspicuous, marginal, immediately below the base of the antennæ, in a chitinous plate (see figs. 1 and 2).

Legs well developed. Femur and trochanter together a little longer than tibia; tarsus about two-thirds length of tibia. All the joints with a few stout spines, principally on their inner areas. Claw (fig. 5) falcate, broad at base; the terminal half demarked by an incomplete division simulating a joint; the broad basal part encircled by a series of from 8 to 10 long stout clubbed digitules.

Spiracles conspicuous, circular; eight on each side, of which two pairs open on the venter of the thorax and six pairs on the dorso-lateral area of the abdomen. Each segment with a median band of small circular grandular pores

which are more numerous and crowded towards the posterior extremity of the body, the terminal segment being almost evenly covered with them.

Genital aperture on venter of terminal segment. Anal orifice simple, encircled by a stout chitinous ring, opening on the extreme posterior margin (fig. 6).

There are small series of stout setæ on the venter of all the segments, with the exception of the first and last segments of the abdomen (see fig. 1).

Length of extended body from 4.5 to 6 mm. Breadth across base of abdomen, 1.5 mm.

Colour of shrivelled insect, blackish or slaty brown.

During oviposition the body of the female becomes greatly shrivelled and covered with a white woolly secretion, which is eventually extended as a loose ovisac of from 4 to 6 mm. in length. At the completion of the egg-laying process the female insect is reduced to a length of 1 mm. or less, the body becoming completely telescoped.

Eggs and young larvæ very pale yellow. Length approximately 0.25 mm.

The larva is of a regular oval form, the body terminating in two short setæ. Antennæ 6-jointed; basal joint large and broad; 2nd, 3rd and 4th smallest; 5th larger, broadly dilated; 6th longest, tapering to the extremity. Claw with 2 digitules (fine knobbed hairs). Rostrum conspicuous. A long stout seta projects laterally on each side of the body, on a level with the base of the rostrum. Thoracic spiracles (4) large and conspicuous; no abdominal spiracles.

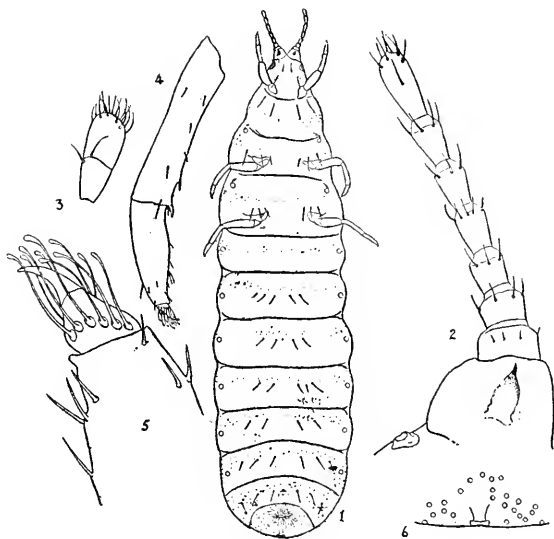
Subsequent stages of the female have not been observed. They may be expected to occur, buried in the inner tissues of the bark, in an encysted form, without limbs or antennæ.

A few empty male puparia were found, entangled in the ovisacs of the female. They are in the form of rather closely felted narrow cocoons, 1.5 mm. in length.

Larval exuviae of the male exhibit short conical antennæ of 7 joints, each with many long stout bristles. The apical joint broadly oval, the others mere chitinous rings decreasing in size from the basal joint, which is about as broad as the length of the apical joint. Derm with many large multilocular spinnerets and stout setæ. Claw with 4 or more stout knobbed digitules.

When discovered, on the 20th June, the females were already

spent and shrivelled, and the ova were commencing to hatch. The ovisacs were first noticed, sparsely, in crevices in the stems of old birch trees, but were subsequently discovered, more abundantly, amongst decayed leaves and rubbish at the base of the trees. It would appear, therefore, that the normal habit of the fertilised female is to leave the tree and descend into the loose material at the base of the stems.



EXPLANATION OF FIGURES:

Kuwania britannica.

1. Adult female, optical section from the ventral aspect, $\times 13$.
2. Antenna and eye, $\times 95$.
3. Terminal joint of antenna, showing subdivision, $\times 95$.
4. Distal half of mid leg, $\times 95$.
5. Foot, $\times 350$.
6. Posterior extremity of body, showing anal orifice, $\times 95$.

Eaglesfield, Park Road,

Camberley :

July, 1914.

SOME OBSERVATIONS ON *BUPALUS PINIARIUS*, L.

BY H. G. CHAMPION, B.A.

Having become interested last year in the ravages of *Bupalus piniarius* at Salmünster, S.W. Prussia (*cf.* Ent. Mo. Mag., vol. L., p. 41), I was glad of an opportunity last Easter to see another and even better example at Eberstadt, near Darmstadt, Hessen. I mentioned (*loc. cit.*) that at Salmünster no steps were taken to mitigate the destruction done by the larvæ; at Eberstadt, however, the Forstrat had applied various remedies over experimental areas, such as bringing into one section a flock of 200 chickens, which I saw there working very assiduously collecting the pupæ, whose numbers were estimated, from sample plots examined, at about 100 per square metre over a large area. In another place, the moss and needles had been raked into heaps, and the work of destruction left to the birds and the sun, whilst in a third section, the doubtfully advisable method of removing the soil-covering, as litter, pupæ and all, had been applied. The pine trees gave the impression that one had come across a hitherto undescribed deciduous species, so completely were they stripped of needles.

Not inconsiderable numbers of *Sphinx pinastri* pupæ were also to be found, usually two close together under each tree. No *Panolis piniperda* pupæ could be discovered, although this species is sometimes abundant enough to be a pest in the district.

It occurred to me that it might be interesting to breed a few imagines of the *Bupalus* to observe their habits, pairing, oviposition, &c., so I collected a number of pupæ at random and brought them back to Oxford with me. The first thing I noticed was that it was not so easy to "sex" the pupæ as I expected: the width of the portion of pupal skin which covers the antennæ being practically identical (0·016 in. half way down) in ♂ and ♀, and the difference in the transverse grooves marking the joints was by no means striking. Of the 53 pupæ collected, 44 were productive, giving, between April 28th and May 18th, 22 ♂♂ and 22 ♀♀, the former emerging, as usual, earlier than the latter (*e. g.*, on May 3rd, the total was 18 ♂♂ and 5 ♀♀). With two exceptions, the failures were attributable to a Tachinid fly, kindly named for me by Mr. Wainwright as *Carcelia excisa*, Fall., whose larvæ had apparently made their way out of the pupal case of their hosts, one or two from each, and themselves pupated in the mould. The flies emerged between May 20th and June 2nd, nine of them in all. Two ♂ specimens of an ichneumon kindly named as

Cratichneumon dissimilis, Grav., for me by Mr. Claude Morley, were bred on May 1st.

Practically all the *B. piniarius* emerged between about 6 and 8 a.m.; in a quarter of an hour, the wings had doubled in size, and were held more or less vertically; in another quarter of an hour, they were full-sized, and in an hour from emergence, normal in appearance.

Fourteen of the ♀ ♀ were kept under as close observation as time would allow. In most cases ♂ ♂ of known ages were confined with the ♀ ♀, the pairs being in boxes of various kinds, and their behaviour watched before, during, and after pairing, and the hour and duration of the latter, as well as the details of oviposition noted.

In one case only of those watched did copulation take place during the first night after emergence, nor was this the case, so far as I know, in any of the remainder. During the first evening and the next day the as yet unfertilised ♀ was often observed apparently to go through the motions of oviposition, feeling the underside of a pine needle with the extended tip of the abdomen. It seems probable that these movements sexually excite the ♂, as although he may have already been clambering about over the ♀ without paying her the slightest attention, in three of the four cases of copulation actually seen, the ♀ had immediately before, been acting in this manner. At other times, the ♂ was observed attempting to find the tip of the abdomen of the ♀ with his own, opening and shutting the anal claspers, but either the ♀ fluttered away, or the ♂ fell away and almost at once gave up the attempt to find his partner.

Insufficient data were collected to show whether the absence of pairing on the first night was due to immaturity of either sex, but in the one case under accurate observation, and one other, where it did take place, the ♂ was several (4) days older than the ♀. In one experiment, copulation took place at 0.30 p.m., but between 10.0 p.m. and 2 a.m. was the usual time. The immediate indifference of the ♂ once in copula to the otherwise very powerful stimulus of light was very noticeable.

The recorded times ♂ and ♀ remained in copula were $3\frac{3}{4}$, $3\frac{3}{4}$, $3\frac{3}{4}$, and between 3 and 4 hours respectively. One pair were more or less forcibly persuaded to separate after 20 mins. to see the resultant effect on the fertility of the ♀ (*cf. infra*).

The shortest time from the beginning of copulation to the laying of the first egg was $6\frac{1}{2}$ hours or $2\frac{3}{4}$ hours after the separation of the

♂, the time of the day not seeming to have any effect. The size or material of the box did not seem to make much difference—all were kept equally damp—but the absence of pine-needles caused a lengthening of the period to some 40 hours.

The species is apparently strictly monogamic: owing to the fact that the observations were only begun after most of the ♂♂ had emerged, none of this sex were to hand for the later of the ♀♀, and so those ♂♂ which had paired in the first few experiments, were put to these ♀♀, and in no case did copulation occur. Similarly, neither the ♂ nor the ♀ of the pair separated after 20 mins. paired again. After the ♀ has remained virgin for a couple of weeks, she seems to lose her attraction for the opposite sex; at least, after this time no pairing occurred, though fresh ♂♂ were confined with three such till their death.

Oviposition was watched on several occasions; the ♀ sits on a needle and bends the tip of the abdomen round to the underside of it, and after the site chosen and the side of the last deposited egg, if a row is being laid, has been smeared with some adhesive secretion, the ovum is passed quickly down the semi-transparent ovipositor on to the needle. At first they are deposited in rapid succession, *e.g.*, a row of eight in 4 minutes 25 secs. (intervals of 45, 30, 25, 45, 30, 45, and 45 secs.). The maximum number thus laid in a row was 18 (the maximum altogether on a single needle being 28), but the average about 6, single ova being the exception; the great majority were laid on the flat (upper) face of the needle. The last few ova were often laid irregularly, *e.g.*, on top of a previous row or on the side of a needle: the whole period was 4–8 days, after which the ♀ weakened and died, but I do not think that in all cases the full number of ova were laid. The totals obtained in five experiments were 208, 146, 127, 143 and 106, giving an average of 146. Only 72 ova were laid on the sides of the box by the ♀ not provided with a pine shoot.

Out of 714 ova, 646 were fertile—a little over 90 %, though nearly another 10 % (nearly all of them in the same batch) of the larvæ failed to emerge successfully, dying apparently from desiccation after the exit hole had been made; in two experiments, all the ova were fertile. The unfertile ova are easily recognised, as they remain green and eventually “cave in.”

The development of the larva can be readily seen through the thin translucent chorion, the six ocelli on each side being easily distinguishable. A large hole is eaten through the shell by the young

larva, and after a short rest it creeps out some 22-28 days after the ovum was laid; no more of the shell is eaten after emergence. The hole is always, as one might expect, lateral, and always near, but not at, one end of the longer axis (so as to clear the next ovum), but in a row of ova the holes are not all on the same side, although invariably at the same end—one would like to work out the reason for this.

Of two of the non-fertilised ♀ ♀ of four experiments, two laid 9 and 2 ova respectively after 11 and 17 days—no larvæ of course resulting; the other two died after 20 days without ovipositing at all. The above-mentioned ♀ which was *in cop.* a short time only, laid 17 ova more or less irregularly on the needles, the first 48 hours after pairing; all were sterile.

Unfortunately, time has not permitted a study of the habits and development of the larva, beyond the noting of the characteristic mode of eating and the marked preference for the needles of the previous year. The protective resemblance of the larva to the foliage of the pine, especially to the young needles, is very marked.

New College, Oxford:

July 2nd, 1914.

Bledius bernhaueri, Cam.; *change of name*.—In the volume of this Magazine for 1912 (Vol. XLVIII, p. 28) I described a new species of *Bledius* under this name. Dr Bergroth has pointed out that the name is pre-occupied since 1909 by a species described by Poppins from Northern Russia, which is, however, omitted from the latest catalogue. I propose that my species should bear the trivial name of *renominatus*—M. CAMERON, H.M.S. "Cornwall," Training Squadron: July 13th, 1914.

A further note on Mysia oblongo-guttata, L., *ab. nigroguttata*, Dollman.—I, too, beat an example of this aberration off a young pine at Woking this year. My specimen is quite mature. In addition to having the usual white blotches on the elytra, it possesses the dark brown spots described by Dollman, each of which is surrounded by a narrow pale zone. I was struck, on comparing it with Mr. Dollman's figure (Ent. Rec. XXIV, plate II) by its perfect agreement with the latter. The shape of the brown spots is exactly the same, and they are produced by a deposit of pigment. I cannot, therefore, agree with Mr. Champion (Ent. Mo. Mag., 1914, p. 176), when he believes that this aberration is caused merely by immaturity, *i.e.*, by the non-development of the normal white, instead of the presence of a brown pigment. I am inclined to

think that we are here dealing with a distinct fixed variety rather than with an aberration, since it must surely be more than a mere coincidence that the only two mature specimens in existence agree perfectly in their markings.

I may take this opportunity to mention that, among the numerous examples of *Erochomus 4-pustulatus*, L., that I saw at the same time, there was a specimen of the ab. *koltzei*, Weise, in which the red spots on the elytra are enlarged, and broadly confluent. According to Ganglbauer (*Die Käfer von Mitteleuropa*, Vol. III, p. 985) this aberration is found in Dalmatia and Greece. It has not, hitherto, been recorded from Britain.—G. W. NICHOLSON, 10, Devonshire Place, W.: *July 2nd*, 1914.

Coleoptera in the Plymouth district.—The following species have been taken by me on the dates given, and under the conditions noted with each, viz.:—

**Anchomenus thoreyi*, Dej., one, v.14, Par Marsh, Cornwall. *Laccobius minutus*, L., one, v.11; and *L. regularis*, Rey, 11, viii.11, in rivulets on the moor near Shaugh. *Ochthebius poweri*, Rye, vii.11, one in a fresh water trickle on the rocks at Bovisand. Careful search at the time of capture, and several hunts later in the autumn, as well as in the following spring, were all fruitless. *Oxyptoda spectabilis*, Maerk, v.11, one by sweeping, Avonwick. *Calodera æthiops*, Grav., two, viii.13, dried pond, Plym Bridge. **Homalota eichoffi*, Scriba, v.10, one on wall at Lipson (*teste* Herr Bernhauer per Dr. Cameron). *H. luteipes*, Er., vi.11, one, flood rubbish, Bere Ferrers. *H. debilis*, Er., iii.12, one, roots of rushes, Yelverton. *H. ignobilis*, Shp., iii.12, one in sugar trap, Ivybridge (*teste* Dr. Cameron). *H. humeralis*, Kr., vii.11, one, Bittaford; also at Bere Ferrers and Yelverton, v.08; Brent, 1899. *H. orbata*, Er., v.11, one at roots, Burrow Island (*teste* Dr. Cameron). *Phytosus spinifer*, Curt., vii.11, one at Bovisand. *Heterothops prævia*, Er., iv.13, one, Slapton Lea. *Philonthus fumigatus*, Er., x.14, one, cut grass, Yelverton. **P. nigrita*, Nord., v.14, one, Par Marsh, Cornwall. *Sunius filiformis*, Latr., v.11, two, Bigbury Bay. *Stenus melanarius*, Steph., vi.11, one in moss, Bere Ferrers. *Trogophlæus fuliginosus*, Grav., one, vii.11, Lipson Marsh (now filled up for town improvements!); and one, vi.13, at Plym Bridge in dried pond. *Coryphium angusticolle*, Steph., x.14, six out of three old nests of thrushes, Yelverton. *Homalium allardi*, Fairm., vii.11, two in seaweed, Bovisand (*teste* Herr Bernhauer per Dr. Cameron). **Bryaxis waterhousei*, Rye, x.12, Cargreen, Cornwall, two in rubbish on the shore. **Cathartus advena*, Waltl., one from damaged cattle food, lying at Duke's Dock, Plymouth. **Enicmus testaceus*, Steph., 20, and *Aspidiphorus orbiculatus*, Gyll., viii.13, in numbers from a black powdery fungus (*Stemonitis fusca*, Roth.—kindly named for me by Miss L. M. Berry) on a fallen beech tree, Plym Bridge. *Dasytes ærosus*, Kies., v.11, two from hawthorn blossom, Saltram. *Dryophilus pusillus*, Gyll., vi.13, two by sweeping, Plym Bridge. **Sphindus dubius*, Gyll., viii.13, one on fallen beech, Plym Bridge. **Dorytomus costirostris*, Gyll., vi.14, in quantity on aspen, Yelverton.

The species not previously recorded for the county marked with an asterisk.* —JAMES H. KEYS, 7, Whimble Street, Plymouth: *July 2nd*, 1914.

Notes on the breeding of Cateremna terebrella, Zk., and Retinia resinella, L.
 —Last Easter I collected, near Salmünster, S. Prussia, a number of the full-sized resin cocoons of *Retinia resinella*, L., which were not uncommon on the Scots Pine, isolated trees between the ages of 10–30 years being most prolific. I brought them back with me to Oxford, and from the 34 bred out only 8 specimens of the Tortricid between May 7th and 23rd (though 11 dead pupæ were afterwards found to be present), but quite a number of other insects. Several *Ernobius mollis*, L. (Coleop.), walked up out of the twigs or cocoons after I had had them a fortnight, and likewise an undetermined Cecidomyid in some numbers, the empty white pupa skins being found loose in the box afterwards, and finally 5 ♂♂ and 15 ♀♀ of a Braconid, identified for me by Mr. Claude Morley as *Macrocentrus abdominalis*, Fab., emerged between June 3rd and 20th, just four weeks after the *Retinia*.

During the same visit I collected about 40 dwarfed spruce-cones from the ground in a “stand” at Bad-Soden, containing larvæ of *Cateremna terebrella*. The first thing that emerged, about a dozen of it in all, was a small as yet undetermined Dipteron, and shortly after (April 28th), a ♂ *Cacæcia musculana*, Hb., whilst the first *Cateremna*, a ♂, emerged on May 20th, and others making a total of 6 ♂♂ and 2 ♀♀ appeared up to June 3rd. The cones contained some 8 or 10 full-grown larvæ and nymphs of a species of *Rhaphidia* which safely completed their metamorphoses; these were probably responsible for the small yield of the Lepidopteron! A single specimen of the Braconid, *Phanerotoma planifrons*, Nees, ♂, was also bred. On opening the cones last week, I found one of them still to contain a full-grown healthy larva. H. G. CHAMPION, Heatherside, Horsell, Woking: July 10th, 1914.

Earwigs at “sugar.”—I did not commence sugaring for moths until about the middle of June this year. As a rule I am (like most other collectors) pestered with large members of the common earwig (*Forficula auricularia*) at my sugar, and this year has been no exception to the rule, with this difference that instead of fully grown specimens enormous members of very young ones from one-third to half-grown have appeared, with only about one in a hundred fully grown. What can be the reason, and has the dry weather in May and early June had anything to do with the disappearance of the matured specimens? —J. GARDNER, Laurel Lodge, Hart: July 8th, 1914.

A note on Psylla hippophaes, Först.—Mr. Edwards records but two localities for this Homopteron in Britain in 1896, and I have seen no further notices of it; these are Deal, whence it was introduced as British by Scott in 1876, and Winterton on the east Norfolk coast, where I also have collected, but failed to discover the present species, for which I was not especially looking at that time. It is found exclusively upon the Sea Buckthorn (*Hippophae rhamnoides*), the rarity of which is evidenced by its record from only seven of the hundred and twelve divisions into which Britain is divided in the London Catalogue of plants; the *Psylla* is consequently equally or more local, though probably common wherever its pabulum occurs.

Mr. E. A. Elliott and I found both plant and insect common upon the Lincolnshire coast at Skegness during June 1912.

In Suffolk the Sea Buckthorn has been recorded from two localities only : in sandy lanes between Shottisham and Sutton Heath (five miles from the sea and three from the River Deben) and at Thorpe (a mile or so to the north of Aldeburgh, on the east coast). I have searched in vain for it at the former locality, where it may now be extinct. I have searched in vain for it at the latter, till July 10th, 1914, when I discovered a small patch of very low bushes, some thirty yards by less in extent ; and upon these the *Psylla* was at once found to be abundant. Edwards only describes a greenish white form of this species with pale rust-yellow markings ; this is occasionally entirely pale flavidous and not always with rufescent markings, the elytra not infrequently have no infusate tinge. But there is a very distinct form (doubtless of the same species), occurring in both sexes, which is pale brick-red throughout with pure white pronotum, scutellum, &c. ; the abdomen banded above with piceous or black ; the occiput and more of the flagellum black ; and the anterior femora infusate above ; it is a larger and stouter form than the viridescens one, with the elytra strongly infusate towards their apices. Of those I captured only one-fifth belonged to this darker form, which I here name var. *suffolciensis*.

The *Psylla* associated here with few other insects, the majority of which doubtless came from the rough heath grasses and *Ononis reclinata*, among which its pabulum was considerably intermingled and partly hidden. The only ones seen in the course of a somewhat thorough search were *Macrotylus paykulli*, Fall. (abundant), *Dicyphus annulatus*, Wolff, *Stiroma affinis*, Fieb., *Rhizobius litura*, Fab., *Agelastica halensis*, L., *Sapromyza lupulina*, Fab., *Lasius niger*, var. *alienus*, Först., and among marram grass on the surrounding sandhills, *Pompilus plumbeus*, Fab. I shall be delighted to give the *Psylla* to any one whose series is not full of it.—CLAUDE MORLEY, Monk Soham House, Suffolk : July 18th 1914.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY ; Thursday, May 28th, 1914.—Mr. B. H. SMITH, B.A., F.E.S., President, in the Chair.

Mr. Buckstone, 1 ♂ and 3 ♀ hybrids of the cross *Nyssia zonaria* ♂ and *Apocheima hispidaria* ♀. The larvæ were very like those of the latter species and were constitutionally weak, only four imagines resulting from some 300 fertile ova. Mr. West (Greenwich), a specimen of the extremely rare Hemipteron, *Pygolampis bidentata*, taken by him in the New Forest in May. Only one specimen had previously been captured in Britain. Mr. Newman, a living pupa of *Strymon pruni*, which closely resembles bird's excrement. Mr. Gahan, examples of a mealy-bug, both sexes of which had occurred two years running on flowering currant in his garden at Bedford Park. It was supposed to be

Pseudococcus citri, a hot-house species. Mr. K. G. Blair read a paper on "Luminous Insects," many examples of which were exhibited by himself, Messrs. Main, Edwards, and H. Moore.

April 9th.—CORRECTION, p. 158, line 10, for *Lita melanella* read *Lita leucomelanella*.

Thursday, June 11th, 1914.—The President in the Chair.

Mr. Dunster exhibited a short series of blue females of *Polyommatus icarus* from Horsley. Mr. Edwards, butterflies from Costa Rica, New Granada, and Borneo. Mr. W. West, the various species of *Coleoptera* taken by himself in the New Forest in mid-May, mainly from hawthorn blossom. Mr. Curwen, about a dozen species with various forms of *Anthroceridæ* (*Zygænidæ*) taken by him in numerous holidays on the Continent. Mr. Turner communicated a note on the species of mite, (*Acarus*) *Tetranychus lintearius*, which had recently been exhibited as causing devastation among gorse-bushes.

Thursday, June 25th, 1914.—Mr. E. STEP, F.L.S., in the Chair.

Messrs. Blair and Main exhibited a number of interesting items collected by them during a recent holiday around Meiringen and Lugano, including (1) Living larvæ of *Crioceris* sp. on Black Byrny (*Tamus communis*); (2) *Polistes gallica* (living) on its nest; (3) Living glowworms, *Lampyrus noctiluca*; (4) Living fireflies (*Luciola italica*) which were "flashing"; (5) A field cricket found by Mr. Ashdown; (6) A series of *Cetonia stictica*; (7) Specimens of *Gnophos glaucinaria* with ova, etc. Mr. Coulson, a long series of many degrees of blue coloration of the females of *Polyommatus icarus* from Horsley and several *Cænonympha pamphilus*, one having a bipupillate apical spot and another with three well-developed eye-spots on the hindwings above.—Hr. J. TURNER, Hon. Secretary.

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*. &c. (33).

BY THE REV. F. D. MORICE, M.A., F.E.S.

TENTHREDOPSIS, COSTA. ♂♂.

Fate has been very unkind to me in the matter of *Tenthredopsis* ! Two years ago I arrived at that genus in these papers, and had to own myself incapable of tabulating it, though I ventured to give a list of the named varieties of one species, which afterwards had to be withdrawn and rewritten. Then, in 1913, Dr. Enslin granted me the privilege of reading in advance his own important and original treatment of the genus then in the press; and I prepared at once a paper, necessarily of greater length than usual, and written with special care (which, as it turned out, was superfluous), to use Dr. Enslin's kind-

ness without abusing it, and especially not to anticipate improperly in a paper, which, as I supposed, would appear *before* his work appeared, the terminology and nomenclature to be introduced into the latter. However, owing to causes over which I had no control, no part of my paper appeared till Dr. Enslin's work was already published; and, as I had feared from the first, the paper—which, unless read as a whole, was bound to be almost unintelligible—could not be published as a whole, and had to appear in fragments (*disjecta membra*) scattered through several numbers (and not even consecutive numbers) of Ent. Mo. Mag. (February, March, and June, 1914). Also the Index on the cover of the June number made it appear that these "Help-Notes" as a whole were now "concluded"; and this has brought me letters from several readers of my papers, to which I must now reply by explaining that such is not the case! I have still to tabulate as best I can the ♂♂ of British *Tenthredopsis*; and further, since I commenced the "Help-Notes" in January, 1903, many things have happened to make at least the earlier papers of that series more or less obsolete. The classifications and terminologies introduced by Konow, which I then thought it wisest to adopt with a minimum of discussion, have since been reconsidered by himself and others, and no longer represent (as they then did) the latest views of hymenopterological experts. Mr. Rohwer (followed at present, though unwillingly, by Dr. Enslin in his Revision of Central European *Tenthredinoidea*) has proposed a number of reforms in the hitherto generally accepted nomenclature, some of which, I believe, will have to be adopted, though as to others I think he is mistaken, and shall shortly be discussing the subject elsewhere, viz., in the Transactions of Ent. Soc. Lond. Also, since January, 1903, I have become acquainted with several forms not then known to me as British—species, sexes of species, and even genera! And, though I have alluded to these in "Help-Notes" from time to time as they came to my knowledge, the allusions are at present scattered, and must be brought together in some way—indeed it will probably be desirable to re-write some of my original synopses in order to include the forms at present omitted from them.

Evidently, then, here is material for at least two or three more instalments of "Help-Notes," before I can write "concluded" to the series, and lay down my pen.

Perhaps I may here make a petition, viz., that correspondents who have sent to me specimens which I have returned to them as not

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DESIDERATA.

I am at present engaged in working out the life-history of *Xestobium tessellatum*, an insect that has done a great deal of damage to the roof of Westminster Hall. As the matter is one of great interest to the public, I should be very grateful for any assistance; living beetles or affected timber being required for investigation.—JAMES W. MUNRO, Imperial College of Science and Technology, S. Kensington, S.W.

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known to me previously from Britain (*e.g.*, the ♂ of *Abia fasciata*, either sex of *Lophyrus virens*, etc., etc.) would kindly remind me of the fact on a postcard. It might help me, in some cases, to *see* these specimens once more, before adding them to my revised Tabulations; and in all cases I should be glad to have the records (date and place of capture, etc.).

I have promised to tabulate, as best I can, such ♂♂ of British *Tenthredopsis* spp. as are known to me. But I must begin by saying that, in my opinion, any such tabulation can only be provisional. Some of the forms, though I believe them to belong to distinct species, I am as yet quite unable to separate on any characters which I can believe to be specific. Nor, though I have placed them in my collection under certain names along with similarly named ♀♀ which I suspect to be their mates, is it possible for me to feel in the least sure either that they belong to such ♀♀, or that they have any real right to the names by which at present I know them, or that (even if they *have* such a right) they have not also some earlier name, which, according to the law of priority, ought rather to be applied to them. I have recently had cause to consider seriously the grounds on which certain old names of 18th century authors have been thought to denote this or that of our present species. The result is almost always the same. The description turns out to be based, either certainly, or at least most probably, on a mere "mix-up" of superficially similar, but really quite different insects—often not even members of the same genus! My personal inclination would be to treat such so-called species, and the names given to them, as having no status in scientific nomenclature at all, and as comparable to the griffins, centaurs, and such like composite monsters of antiquity. But this is not the view now taken by those best qualified to decide such matters. It seems to be generally admitted that, when once a name has been introduced into zoological literature to denote a certain group of individuals (or of species, or of genera, etc., etc.), that name (unless previously introduced with another meaning, or superfluous as a mere re-naming of something properly named already*), must for ever be retained to designate at least *some part* of the group to which it was originally applied. Thus supposing Linné, let us say, to have introduced some new name, *e.g.*, *rubripes*, for some previously nameless group of individuals which he considered to form one species, then—even though we now know that the old author was mistaken, and have to break his species up—we must still keep the name

* In the former case it is called a *Homonym*, in the latter a *Synonym*.

once given for some part of the so-called "species," and are not allowed to discard it altogether. Suppose even that this *rubripes* is to us a mere mystery, that we can see no reason why any at all of the forms known to us should or should not be supposed to have been included in it, still we are not allowed to drop the name; somebody before us is almost sure to have applied it to some form which is known to us, and unless we can absolutely prove that he was mistaken, we are apparently bound to follow him—or, if we *can* prove this, which is seldom likely to be the case, still there must remain *some* species called *rubripes*, L., and it is for us to decide, as best we can, what form shall bear that name, and be supposed to be the *rubripes* of Linné.

SYNOPSIS OF BRITISH *TENTHREDOPSIS*, ♂♂.

1. Apical margin of clypeus deeply excised in the middle. Ground colour black, but with the intermediate segments of the abdomen widely red laterally and copious *pictura albida* on head and thorax. Tegulæ and edges of pronotum white. Hind-wings as in all our ♂♂ of this genus (*vide infra*) except that of *coquebertii*..... *excisa*, Th.
 — Apical margin of clypeus sub-truncate, or very gently sinuated inwards throughout, with no definite excision..... 2.
2. Wings with "continuous external neuration," *vide* Ent. Mo. Mag., March, 1903, p. 53.....3.
 — Wings without "continuous external neuration." Body, except its *pictura albida*, may be entirely black, but more often with the abdomen almost entirely red (beyond the propodeum), Tegulæ and edge of pronotum dusky, never white or yellow.....*coquebertii*, Kl.
3. Black, or red and black (not yellow) forms. In all British specimens examined by me, the thorax beneath (breast, pleuræ, &c.) is entirely black.....5.
 — The general coloration is yellowish, marked above more or less (but only in certain limited areas) with black. The breast, pleuræ, &c., are normally (? always) pale and immaculate. Larger insects than those of our other sections; may be as much as 12 mm. long!.....4.
4. The apex of the last visible ventral-plate is distinctly sinuated inwards (Konow says, "*semicirculariter*," but this must not be taken too literally, Enslin's "*viertelkreisförmig*" is nearer to the truth!) The last visible dorsal segment has a well-marked Ω -shaped impression before its apex, and this impression (at its apex only) is imperfectly chitinized (membranaceous). The general ground-colour is orange, with copious *pictura* of a paler tint on head, thorax, and propodeum. A patch of black occupies the whole ocellar region and extends beyond it, and there are other black markings (more or less variable) on the thorax and abdomen above, some of them mere streaks, hardly to be

noticed till one looks for them ! Antennæ long, slender, and yellowish. (The genitalia of this species seem to present good characters, which can often be seen even without dissection ; e.g., the so-called *sagittæ* end in long curved and pointed processes (spiniform) which, as well as the broadly-rounded laciniae of the stipites, frequently project beyond the apex of the abdomen). *litterata*, Geoffr.

— Last ventral segment (*teste* Enslin !) distinctly excised at the apex, but not widely emarginate, as in *litterata* ; apart from this excision it is said to be “ narrowly rounded.”

Otherwise usually very like *litterata*, but seems to be more variable in colour. I am not sure that I have ever seen a British ♂ of this species. Foreign specimens, which I take to be *nassata*, differ from *litterata* in the genitalia, and also in having a great part of the impression on the last dorsal abdom. segment semi-transparent and membranous (not, like *litterata*, its extreme apex only !) *nassata*, L.

(NOTE.—I feel no doubt whatever that the *nassata* of Linné really included all yellow forms of *Tenthredopsis*. These, however, are not all conspecific ; so Linné's name had to be restricted, and is restricted here, as by Konow, Enslin, and most recent authors).

5. Tegulæ black9.

— Tegulæ white, yellow, or pale brown (in one species distinctly dusky, as compared with the paler margin of the pronotum, not however really black.)6.

6. A large form, with little red on the abdomen, but copious yellow *pictura* on head, thorax, and propodeum (about 11 mm. long.).

Konow referred this insect (taken at Effingham, Surrey) to *tiliæ*, Pz., which, according to Enslin, cannot be separated from *nassata*, and should therefore (I suppose) have the ♂ thorax *pale beneath*. In my insect this is not so ; the pleuræ and breast are *quite black*.

I am inclined on the whole (though doubtfully) to consider this as the ♂ of *austriaca*, Knw.

— Smaller species, 9 to 10 mm. long7.

7. Middle lobes of the mesonotum each marked in its inner (or posterior) angle with a white fleck. (This, however, is a character which must surely vary ! though I can give no better one).

A pretty species with bright lacteous (almost white) *pictura*, very highly developed on head, thorax and propodeum. The extent of red on the abdomen seems to vary. All my specimens are from Scotland, where it has been taken by Mr. H. Scott and Mr. Donisthorpe. The broad yellowish band on the propodeum is rather a striking character in all my specimens, but I have too few of them to be sure that it is constant? *flavomaculata*, Cam.

— Mesonotum immaculate8.

ON *DORYTOMUS MACULATUS*, MARSH. (= *TÆNIATUS*, FAB.), AND
D. COSTIROSTRIS, GYLL. (*DEJEANI*, FAUST).
 OF BRITISH COLLECTIONS.

BY E. A. NEWBERY.

A great deal of confusion seems to prevail concerning these two species. This is no doubt partly owing to Fowler (Col. Brit. Isl. V, 277) having stated that he preferred "to follow Bedel in keeping them together." Bedel does nothing of the kind. Faust, who monographed the genus in 1882 (Bull. Soc. Imp. Nat. Moscou, pp. 386, 424), re-named *costirostris*, Gyll., calling it *dejeani*, and Bedel makes use of this name. It is probable that this change was the cause of the species being overlooked by Fowler, since Bedel (Fu. Seine, VI, 119) separates the two as good species, thus :—

Second joint of funiculus at least twice as long as broad; length 4—5 mm....

dejeani, Faust.

Second joint of funiculus scarcely longer than broad; length 3—4 mm....

tæniatus, Fab.

Although it is rather an exaggeration to say that the second joint of the funiculus is scarcely longer than broad, still the difference between the two is well marked, the shape of this joint is also much more linear in *dejeani*, somewhat pear-shaped in *maculatus*.

D. silbermanni, Wenck., seems to have no marked characters to separate it from *maculatus*, Marsh., which is a variable insect, both in size and colour. Fowler separates it as a variety, chiefly by size, and Stierlin by its shorter and stronger legs. Bedel and the last (1906) European Catalogue treat it as a synonym of *tæniatus*, Fab. (= *maculatus*, Marsh.).

Dorytomus dejeani appears to feed solely on the aspen (*Populus tremula*). It has been recently taken in some numbers by Mr. J. H. Keys, in his garden at Yelverton, Devon.

13, Oppidans Road, N.W.:

August 13th, 1914.

(At Cothill, Berks, *D. dejeani* is usually abundant in early summer on a few small trees of *Populus canescens*, Sm., in company with *D. tortrix* (plentiful), *tremulæ* (sparingly), *Rhytidosomes*, and other poplar-frequenting beetles. *D. maculatus* occurs freely on adjacent willow bushes, but it is very rarely to be found on the poplars.—J. J. W.)

COLEOPTERA AT CLOGHANE, Co. KERRY.

BY J. R. LE B. TOMLIN, M.A., F.E.S., AND N. H. JOY, M.R.C.S., F.E.S.

The following is a list of 343 species taken in spring during a short visit to an out-of-the-way corner of co. Kerry.

Cloghane is a small village on the north coast of the Dingle peninsula, some 9 or 10 miles to the west of Castlegregory, and lying at the foot of Brandon Mountain (3127 feet) which slopes right down to the sea. We did not find by any means all the usual mountain species on Brandon; in fact, beetles were, with a few exceptions, remarkably scarce right up to the top, but this was doubtless due to the time of year. It was interesting to find the London Pride (*Saxifraga umbrosa*) growing wild on the top of Brandon. The south-west of Ireland is its only foothold in the British Isles, and it is often locally dubbed St. Patrick's Cabbage.

Some very large rock pools 1500 ft. up failed to produce anything in the way of insects owing to the apparent total absence of vegetation. They were tenanted, however, by enormous numbers of the little fresh-water limpet *Ancylus fluviatilis*, L., adhering to the bare rocky sides, and feeding no doubt on microscopic algæ. They all had remarkably thin transparent shells, probably due to a lack of lime.

A considerable part of the coast-line between Cloghane and Castlegregory consists of sandhills with a lot of marshy ground behind, and it was under stones in this marshy ground that *Micropeplus cælatus*, Er., a species new to Britain, occurred in 1909 (see Ent. Mo. Mag., vol. XLV, p. 149).

The following species and varieties are additions to Johnson and Halbert's "List of the Beetles of Ireland" (Proc. Roy. Irish Academy, 3rd series, vol. VI, No. 4, 1902):—

Pterostichus cupreus var. *affinis*, Stm.

Hydroporus melanarius, Stm.

Ochthebius viridis, Peyr. Taken in the marshy ground mentioned above.

Mycetoporus longicornis, Kr.

Homalota malleus, Joy.

Philonthus keysianus, Sharp.

Homalium rugulipenne, Rye.

Hister bissezi *striatus*, F.

Coccinella 11-punctata var. *brevifasciata*, Weise. This variety is common in Ireland. We have notes of its occurrence also at Roundstone, Dog's Bay, Port Ballintrae, and Ballycastle, co. Antrim, in each case commonly.

Micropeplus cælatus, Er.

Cryptophagus pallidus, Stm., in rubbish on the sandhills. We have it also from Athenry, co. Galway.

Longitarsus gracilis var. *poweri*, All. With the type on *Senecio jacobæa*.

For convenience of reference we follow the order and nomenclature of Johnson and Halbert's List.

Cicindela campestris, L.; *Cychrus rostratus*, L.; *Carabus catenulatus*, Scop.; *C. clathratus*, L., not uncommon under stones on the top of turf walls; *C. granulatus*, L.; *Notiophilus biguttatus*, F.; *N. aquaticus*, L.; *N. palustris*, Duft.; *Leistus fulvibarbis*, Dej.; *L. rufescens*, F.; *Nebria brevicollis*, F.; *N. gyllenhali*, Sch.; *Elaphrus cupreus*, Duft.; *E. riparius*, L.; *Loricera pilicornis*, F.; *Clivina fossor*, L.; *Dyschirius globosus*, Hbst.; *Broscus cephalotes*, L.; *Badister bipustulatus*, F., Irish examples seem as a rule to be much darker than English; *Bradycellus distinctus*, Dej.; *B. verbasci*, Duft.; *Harpalus ruficornis*, F.; *H. latus*, L.; *H. tardus*, Pz.; *H. anxius*, Duft.; *Anisodactylus binotatus*, F., var. *spuraticornis*, Dej., rather common under rubbish on the sandhills, the type did not occur; *Pterostichus cupreus*, L., and var. *affinis*, Stm.; *P. versicolor*, Stm.; *P. madidus*, F.; *P. niger*, Sch.; *P. vulgaris*, L.; *P. nigrita*, F.; *P. gracilis*, Dej.; *P. minor*, Gyll.; *P. strenuus*, Pz.; *P. diligens*, Stm.; *P. vernalis*, Gyll.; *P. striola*, F.; *Amara spinipes*, L.; *A. tibialis*, Pk.; *A. trivialis*, Gyll.; *A. communis*, Pz.; *Calathus cisteloides*, Pz.; *C. mollis*, Marsh.; *C. melanocephalus*, L.; *Anchomenus angusticollis*, F.; *A. dorsalis*, Müll.; *A. albipes*, F.; *A. marginatus*, L.; *A. parumpunctatus*, F.; *A. atratus*, Duft.; *A. viduus*, Pz.; *A. fuliginosus*, Pz.; *A. gracilis*, Gyll.; *A. piceus*, L.; *Olisthopus rotundatus*, Pk.; *Cilleus lateralis*, Sam., locally common on the shore; *Bembidium rufescens*, Guér.; *B. mannerheimi*, Sahlb.; *B. lampros*, Hbst.; *B. tibiale*, Duft.; *B. atrocæruleum*, Steph.; *B. decorum*, Pz.; *B. littorale*, Ol.; *B. punctulatum*, Drap.; *Trechus minutus*, F.; *T. obtusus*, Er.; *Patrobus assimilis*, Chaud.; *Dromius linearis*, Ol.; *Metabletus foreola*, Gyll.

Haliplus ruficollis, De G.; *H. fluviatilis*, Aubé; *Laccophilus obscurus*, Pz.; *Cælambus inæqualis*, F.; *C. impressopunctatus*, Sch.; *Hydroporus lepidus*, Ol.; *H. palustris*, L.; *H. incognitus*, Sharp; *H. memnonius*, Nic.; *H. melanarius*, Stm., on Brandon Mountain; *H. nigrita*, F.; *H. discretus*, Fairm.; *H. pubescens*, Gyll.; *H. lituratus*, F.; *Agabus bipustulatus*, Ol.; *A. sturmi*, Gyll.; *A. biguttatus*, Ol.; *Ilybius fuliginosus*, F.; *Colymbetes fuscus*, L.; *Gyrinus natator*, Scop.

Hydrobius fuscipes, L.; *Anacæna globulus*, Pk.; *A. limbata*, F.; *Philydrus nigricans*, Zett.; *P. melanocephalus*, Ol.; *Laccobius alutaceus*, Thoms.; *L. minutus*, L.; *Limnebius truncatellus*, Thoms.; *Chætarthria seminulum*, Herbst; *Helophorus æneipennis*, Thoms.; *H. brevipalpis*, Bed.; *Ochthebius viridis*, Peyr.; *O. bicolor*, Germ.; *Cyclonotum orbiculare*, F.; *Sphæridium scarabæoides*, F.; *Cercyon littoralis*, Gyll. and var. *binotatus*, Steph.; *C. depressus*, Steph.; *C. hæmorrhoidalis*, Herbst; *C. flavipes*, F.; *C. lateralis*, Marsh.; *C. melanocephalus*, L.; *C. unipunctatus*, L.; *C. quisquilius*, L.; *C. minutus*, Muls.; *Megasternum boletophagum*, Marsh.; *Cryptopleurum atomarium*, F.

Aleochara brevipennis, Gr.; *A. cuniculorum*, Kr.; *A. lanuginosa*, Gr.; *A. succi-*

cola, Thoms. ; *A. nitida*, Gr. ; *A. morion*, Gr. ; *A. obscurella*, Er. ; *Oxyptoda opaca*, Gr. ; *O. umbrata*, Gr. ; *O. rupicola*, Rye ; *O. longiuscula*, Er. ; *Ocalea castanea*, Er. ; *Myrmedonia collaris*, Pk. ; *Astilbus canaliculatus*, F. ; *Homalota hygrotopora*, Kr. ; *H. volans*, Scr. ; *H. malleus*, Joy ; *H. vestita*, Gr. ; *H. vicina*, Steph. ; *H. graminicola*, Gyll. ; *H. halobrectha*, Sharp ; *H. puncticeps*, Thoms. ; *H. circellaris*, Gr. ; *H. eremita*, Rye, common on Brandon Mountain ; *H. analis*, Gr. ; *H. aquatica*, Thoms. ; *H. euryptera*, Steph. ; *H. trinotata*, Kr. ; *H. sericea*, Muls. ; *H. nigra*, Kr. ; *H. cauta*, Er. ; *H. setigera*, Sharp ; *H. atramentaria*, Gr. ; *H. longicornis*, Gr. ; *H. pygmæa*, Gr. ; *H. fungi*, Gr., and var. *clientula*, Er. ; *Gnypeta labilis*, Er. ; *Tachyusa atra*, Gr. ; *Xenusa sulcata*, Kies. ; *Falagria obscura*, Gr. ; *Phytosus balticus*, Kr. ; *Oligota inflata*, Mann. ; *O. punctulata*, Heer ; *Myllæna minuta*, Gr. ; *M. brevicornis*, Matth. ; *Hypocyptus læviusculus*, Mann. ; *Conosoma pubescens*, Gr. ; *C. immaculatum*, Steph. ; *C. lividum*, Er. ; *Tachyporus obtusus*, L., var. *nitidicollis*, Steph. ; *T. solutus*, Er. ; *T. pallidus*, Sharp ; *T. chrysomelinus*, L. ; *T. humerosus*, Er. ; *T. hypnorum*, F. ; *T. pusillus*, Gr. ; *T. brunneus*, F. ; *Lamprinus saginatus*, Gr., rare in nests of *Myrmica* on tops of walls ; *Tachinus rufipes*, L. ; *T. marginellus*, F. ; *Mycetoporus clavicornis*, Steph. ; *M. splendidus*, Gr. ; *M. longicornis*, Kr., in moss ; *Quedius cinctus*, Pk. ; *Q. fuliginosus*, Gr. ; *Q. tristis*, Gr. ; *Q. molochnikus*, Gr. ; *Q. mauro-rufus*, Gr. ; *Q. umbrinus*, Er. ; *Q. rufipes*, Gr. ; *Q. attenuatus*, Gyll. ; *Q. semiæneus*, Steph. ; *Q. boops*, Gr. ; *Creophilus maxillosus*, L., and var. *ciliaris*, Steph., both common in carrion on the shore ; *Leistotrophus murinus*, L. ; *Staphylinus pubescens*, De G. ; *S. erythropterus*, L. ; *S. cæsareus*, Ced., abundant, and often seen on the wing ; *Ocypus olens*, Müll. ; *O. cupreus*, Rossi ; *O. morio*, Gr. ; *Philonthus intermedius*, Boisd. ; *P. laminatus*, Cr. ; *P. proximus*, Kr. ; *P. decorus*, Gr. ; *P. politus*, F. ; *P. varius*, Gyll. ; *P. marginatus*, F. ; *P. fimetarius*, Gr. ; *P. varians*, Pk. ; *P. vernalis*, Grav. ; *P. ventralis*, Gr. ; *P. quisquiliarius*, Gyll., and var. *dimidiatus*, Er. ; *P. nigrita*, Nordm. ; *P. micans*, Gr. ; *P. nigrutilus*, Gr. ; *P. key-sianus*, Sharp ; *Cafius xantholoma*, Gr. ; *Xantholinus punctulatus*, Pk. ; *X. ochraceus*, Gyll. ; *X. linearis*, Ol. ; *Othius fulvipennis*, F. (a small form) ; *O. melanocephalus*, Gr. ; *O. myrmecophilus*, Kies. ; *Lathrobium boreale*, Hochh. ; *L. fulvipenne*, Gr. ; *L. brunnipes*, F. ; *L. quadratum*, Pk. ; *L. terminatum* v. *immaculatum*, Fowler ; *L. multipunctum*, Gr. ; *Cryptobium glaberrimum*, Herbst ; *Stilicus orbiculatus*, Er. ; *S. affinis*, Er. ; *Sunius angustatus*, Pk. ; *Pæderus fuscipes*, Curt. ; *Dianous cærulescens*, Gyll. ; *Stenus bimaculatus*, Gyll. ; *S. juno*, F. ; *S. speculator*, F. ; *S. bupthalmus*, Gr. ; *S. nitens*, Steph. ; *S. pusillus*, Er. ; *S. fuscipes*, Gr. ; *S. declaratus*, Er. ; *S. crassus*, Steph. ; *S. brunnipes*, Steph. ; *S. ossium*, Steph. ; *S. geniculatus*, Gr., in moss on Brandon Mountain ; *S. impressus*, Germ. ; *S. flavipes*, Steph. ; *S. pallitarsis*, Steph. ; *S. nitidiusculus*, Steph. ; *S. picipennis*, Er. ; *S. similis*, Herbst ; *S. paganus*, Er. ; *S. latifrons*, Er. ; *Bledius arenarius*, Pk. ; *Platystethus arenarius*, Fourc. ; *Oxytelus rugosus*, Gr. ; *O. sculpturatus*, Gr. ; *O. maritimus*, Thoms. and var. *perrisi*, Fauvel, common under seaweed ; *O. nitidulus*, Gr. ; *O. tetracarinatus*, Bl. ; *Haploderus cælatus*, Gr. ; *Trogophlæus corticinus*, Gr. ; *Lesteva pubescens*, Mann. ; *L. sicula*, Er. ; *L. punctata*, Er. ; *Acidota crenata*, F., on Brandon Mountain ; *Olophrum piceum*, Gyll. ; *Philorhinum sordidum*, Steph. ; *Homalium rivulare*, Pk. ; *H. riparium*, Thoms. ; *H. rugulipenne*, Rye, common under seaweed ; *Megarthus depressus*, Lac.

Pselaphus heisei, Herbst ; *Bythinus puncticollis*, Denny ; *B. bulbifer*, Reich. ;

Bryaxis juncorum, Leach; *Scydmaenus collaris*, Müll.; *Clambus armadillo*, De G.; *Agathidium lævigatum*, Er.; *Necrophorus humator*, F.; *Silpha rugosa*, L.; *S. subrotundata*, Steph.; *Choleva angustata*, F.; *C. agilis*, Ill.; *C. tristis*, Pz.; *C. chrysomeloides*, Pz.; *Hister neglectus*, Germ.; *H. bissexstriatus*, F., in dung on the sandhills; *Onthophilus striatus*, F.; *Ptenidium punctatum*, Gyll.; *P. nitidum*, Heer; *P. evanescens*, Marsh.; *Orthoperus atomus*, Gyll., in rubbish on the sandhills; *Coccinella 11-punctata*, L., and var. *brevifasciata*, Weise; *C. 7-punctata*, L.; *Scymnus redtenbacheri*, Muls.; *Rhizobius litura*, F.; *Coccidula rufa*, Herbst; *Micropeplus cælatus*, Er.; *Enicmus minutus*, L.; *E. transversus*, Ol.; *Melanophthalma fuscata*, Humm.; *Cryptophagus pallidus*, Stm.; *Micrambe vini*, Pz.; *Atomaria fuscipes*, Gyll.; *A. fuscata*, Sch.; *A. mesomelas*, Herbst; *A. analis*, Er.; *Ephistemus gyrimoides*, Marsh.; *Byrrhus fasciatus*, F.; *Cytilus varius*, F.; *Parnus prolifericornis*, F.; *Heterocerus marginatus*, F., one of a unicolorous slate-colour under seaweed.

Onthophagus nuchicornis, L.; *Aphodius fimetarius*, L.; *A. ater*, De G.; *A. constans*, Dufts.; *A. punctatosulcatus*, Stm.; *A. prodromus*, Br.; *A. rufipes*, L.; *A. depressus*, Kug.; *Ægialia arenaria*, F.; *Geotrupes stercorarius*, L.; *G. sylvaticus*, Pz.

Iacon murinus, L.; *Cryptohypnus riparius*, F.; *Agriotes obscurus*, L.; *A. lineatus*, L.; *Corymbites cupreus*, F.; *C. tessellatus*, F.

Cyphon variabilis, Th.; *Niptus crenatus*, F., taken indoors.

Chrysomela banksi, F.; *C. staphylea*, L.; *Gastroidea viridula*, De G.; *Phædon armoraciæ*, L.; *P. cochleariæ*, F.; *Hydrothassa marginella*, L.; *Lochmæa suturalis*, Thoms.; *Galerucella sagittariæ*, Gyll.; *Longitarsus holsaticus*, L.; *L. luridus*, Scop.; *L. melanocephalus*, All.; *L. piciceps*, Steph.; *L. gracilis*, Kuts., and var. *poweri*, All.; *Phyllotreta undulata*, Kuts.; *P. exclamationis*, Th.; *Aphthona nonstriata*, Goeze; *Plectroscelis concinna*, Marsh.; *Psylliodes napi*, Koch; *P. affinis*, Pk.; *P. marcida*, Ill.; *Cassida flaveola*, Th.; *C. equestris*, F.

Apion cruentatum, Walt.; *A. apricans*, Herbst; *A. dichroum*, Bedel; *A. nigritarse*, Kirb.; *A. virens*, Herbst; *A. striatum*, Kirb.; *A. scutellare*, Kirb.; *A. loti*, Kirb.; *A. humile*, Germ.; *Otiorrhynchus blandus*, Gyll.; *O. scabrosus*, Marsh.; *O. picipes*, F.; *O. sulcatus*, F.; *O. rugifrons*, Gyll.; *O. ovatus*, L.; *Philopodon geminatus*, F.; *Barynotus obscurus*, F.; *Sitones griseus*, F.; *S. regensteinensis*, Herbst; *S. lineellus*, Gyll., common on *Lotus corniculatus* on the sandhills; *S. tibialis*, Herbst; *S. flavescens*, Marsh.; *S. puncticolis*, Steph.; *S. lineatus*, L.; *Hypera rumicis*, L.; *H. polygoni*, L.; *H. plantaginis*, De G.; *H. trilineata*, Marsh.; *H. nigrirostris*, F.; *Liosoma ovatum*, Clairv.; *Bagous glabrirostris* var. *nigritarsis*, Thoms.; *Mecinus pyraister*, Marsh.; *Anthonomus comari*, Crotch; *Orobitis cyaneus*, L.; *Cæliodes quadrimaculatus*, L.; *Ceuthorrhynchus contractus*, Marsh.; *C. quadridens*, Pz.; *C. troglodytes*, F.; *Rhinoncus pericarpus*, L.; *R. castor*, F.

Reading :

August, 1914.

TWO HERMAPHRODITIC SPECIMENS OF *ANDRENA*, AND
A MONSTROUS FORM OF *SALIVS EXALTATUS*, FAB.

BY E. C. L. PERKINS, M.A., D.Sc., F.Z.S.

Amongst some species of *Andrena*, collected this spring, two hermaphroditic examples were taken. One of these is *A. bimaculata*, K., the other, *A. flavipes*, Panz. (= *A. fulvicrus*, K.).

In the latter case the specimen is bilaterally asymmetrical, the right half showing ♂ characters, the left ♀. In the *bimaculata* there is no such division.

A. FLAVIPES.

RIGHT SIDE.	LEFT SIDE.
Hairs of face longer.	Hairs shorter, but less so than in ordinary ♀.
Antennæ thicker, 13-jointed, normal ♂ organ.	Antennæ thinner, 12-jointed, normal ♀ organ.
All the legs as in ordinary ♂.	All the legs as in ordinary ♀.

The general appearance is that of a large robust ♂, the thorax clothed as in this sex, as also the abdomen, and quite different from the ♀.

Genital armature and 7th and 8th ventral segments as in the ♂, there being no trace of ♀ characters. The ducts, glands, &c., as in normal ♂, and living spermatozoa were present.

A. BIMACULATA.

Like a very large and robust ♂ in appearance and clothing, but all the legs are those of a ♀, the scopæ and the floccus of the hind ones developed, though rather less perfectly than in normal ♀, and a little more on one side than the other.

Abdomen as in ♂, but the fifth dorsal segment bears dense appressed hairs apically, and the 6th has an abnormal "pygidial area," fringed on each side, the clothing of these segments evidently corresponding to the ♀ anal fimbria.

No trace of ♀ genital structures was found, the hidden segments, genital armature, glands and ducts, all ♂.

There was no evidence of stylopization or internal parasites in either of these examples.

Last year, two monstrous examples of *Salivs exaltatus*, ♀, were taken on the same day from Umbelliferous flowers, on which were many normal specimens.

These are nearly identical in structure, the abnormality being due to the entire absence of ocelli, and the enormous development of the compound eyes. The latter are almost as developed as in ♂ *Astatus*, the space between them both on the vertex and upper part of the front being very narrow. There is a large fovea on the vertex posteriorly. All the other parts of the insects are entirely normal.

Mr. A. H. Hamm has informed me that he has taken a similarly abnormal Pompilid, but whether it belongs to the same species or whether it came from the same locality, I do not know.

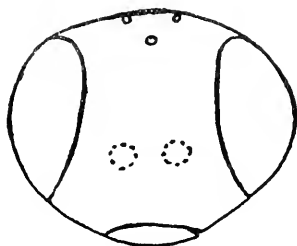


FIG. 1.

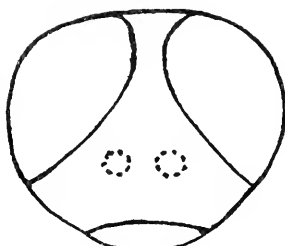


FIG. 2.

The rough "camera lucida" outlines of the face of one of these abnormal examples (fig. 2) and of a normal specimen (fig. 1) taken with them, show at once the differences referred to above.

Paignton:

August 12th, 1914.

A NEW MOTH PARASITIC ON SPIDERS.

BY E. MEYRICK, B.A., F.R.S.

Six specimens of the following interesting new species of *Gelechiadæ* have been kindly sent me by Mr. T. Bainbrigge Fletcher for identification:—

BRACHMIA XEROPHAGA, n. sp.

♂. 11-12 mm. Head, thorax, and abdomen whitish-ochreous. Palpi pale ochreous tinged with fuscous; terminal joint suffused with dark fuscous. Antennal ciliations minute. Forewings elongate, somewhat dilated posteriorly; costa gently arched, apex obtuse, termen sinuate, rather oblique; 2 and 3 stalked, 7 to termen, 8 and 9 out of 7; ochreous-whitish or pale whitish ochreous, sometimes finely sprinkled with fuscous; a slender fulvous-ochreous streak

along costa throughout, sometimes suffused with dark fuscous towards base; an oblique dark fuscous streak from dorsum near base, reaching nearly to costa; first discal stigma moderate, blackish, plical very small, dark fuscous, slightly beyond it; a somewhat inwards-curved dark fuscous streak from beneath $\frac{3}{4}$ of costa to $\frac{1}{2}$ of dorsum; a submarginal series of partially confluent blackish dots round posterior fourth of costa and termen, followed by a suffused white line, and preceded in apical angle by a spot of dark fuscous suffusion; cilia whitish ochreous, on costa fuscous becoming fulvous-ochreous towards base. Hind-wings light grey; cilia whitish-ochreous tinged with grey.

Mr. Fletcher writes as follows: "You will probably remember the interesting case of *Batrachedra stegodyphobius*, Wals., which was bred in the Zoological Gardens from nests of a *Stegodyphus* (a social spider) from South Africa (Ent. Mo. Mag., 1903, p. 166). Several species of *Stegodyphus* are common in India, spinning large common nests on bushes and trees, and I have examined these several times in the hope of finding a similar symbiotic moth. When at Guindy (7 miles south of Madras City), in March, I was again examining these nests and was lucky enough to find these moths in all stages. The larva, which is dark red in colour, lives in the nest and doubtless feeds on the fragments of the numerous insects caught in the webs; the pupa is also found in the nest, as is the moth itself. The latter may be seen resting on the outside of the web-nest or running freely into the galleries leading to its interior. The whole association is most interesting, and it is satisfactory to have found it in India after having looked especially for it for so long."

Thornhanger, Marlborough:

July 27th, 1914.

ON THE OVA AND YOUNG LARVÆ OF *BERYTUS SIGNORETI*, FIEB.

BY E. A. BUTLER, B.A., B.Sc., F.E.S.

On Whit-Monday, June 1st, I found at the roots of *Ononis arvensis* several gravid ♀ ♀ of this Hemipteron on the road-side bank at Royston, where I obtained *B. clavipes* two years ago. The latter species was again present and in considerable numbers, and I obtained from them a great many ova, which hatched after about a fortnight, but unfortunately almost all the young larvæ died in their first instar. The ♀ ♀ of *B. signoreti* laid about a dozen eggs at considerable intervals of time, on a small *Trifolium*, which was growing with the *Ononis*. The ovum is very similar to that of *B. clavipes* (see Ent. Mo.

Mag., XLIX, p. 28). It is of the same brownish colour, with the same fluted surface, and the same circle of minute points at one end. The only difference is that it is a little shorter, and therefore proportionately stouter, but this difference is almost imperceptible till they are placed side by side; and, indeed, is far less than would have been expected, considering the much smaller size of the imago.

The young larvæ hatched out in the same way as those of *B. clavipes*, by bursting out, with an irregular fracture, through one end of the egg, and not by the removal of a cap at the summit. Their disclosure occurred at intervals during the third and fourth weeks in June. The larva closely resembles that of *B. clavipes*, and is similarly beset, body, antennæ and legs, with capitate hairs. It is shorter in body, and has not the green tinge of the larger species, being quite colourless, save for a slight smokiness of legs and antennæ. The abdomen has many black dots upon its dorsal surface, and from these spring the globe-tipped hairs. I supplied these larvæ with both *Ononis* and *Trifolium*, and by preference they selected the former. But, unfortunately, the same fate awaited them as befell those of *B. clavipes*, and they all succumbed before their first ecdysis.

56, Cecile Park,

Crouch End, N.:

August 15th, 1914.

Hoplia philanthus near Cambridge, and *Homaloplia ruricola* in Oxfordshire.

—It may be of interest to note the occurrence in profusion of *Hoplia philanthus* on the marshy ground known as Quy Fen, a few miles from Cambridge, on the last days of June this year. The beetles were seen by two assistants attached to the University Zoological Laboratory, Messrs. P. H. Sharman and G. A. Drury. On the morning of June 27th, Mr. Sharman saw large numbers of the *Hoplia* flying round one particular bush near a pond, and other specimens scattered at short distances from it. He took four examples, all ♂♂, together with one ♀ *Phyllopertha horticola*. Mr. Drury visited Quy Fen three days later, on the morning of June 30th, and found the insect in great abundance flying round and settling on bushes. He took 22 specimens, 21 being ♂, and only one ♀. On both occasions many more specimens could have been captured had this been necessary. Newmarket and some localities in Cambridge-shire have been recorded for this species. Stephens, in 1830, quotes the Rev. L. Jenyns as recording it from "about Ely, and from the Devil's-ditch, plentiful" (Ill. Brit. Ent. iii, p. 228), but I am not aware that its occurrence on Quy Fen has been previously noted, and the present case affords another instance of the remarkable profusion in which, when it occurs at all, this insect sometimes appears.

At the same time may be mentioned the occurrence of an allied form, *Homaloptia ruricola*, in the Chiltern Hills, a few miles from Henley-on-Thames. The locality was a very steep chalky hill-side, bearing abundance of flowers, rest-harrow, marjoram, thyme, hawkweeds, &c. A single specimen of the beetle was swept from the low, flowery vegetation at the top of the hill on August 1st, 1910, by Mr. J. C. F. Fryer. In the following year the same spot was searched diligently but without success, but in 1912, on June 30th, I found three specimens, apparently all ♀ ♀, in a rather curious manner. They were half buried in the soil under the radical leaves of thistles at the foot of the hill. The weather was chilly and dull. All the specimens belong to the form with reddish elytra.—HUGH SCOTT, University Museum of Zoology, Cambridge.

Xantholinus scoticus, Joy: synonymical note.—This insect appears to me to be identical with what Reitter regards as the type-form of *X. angustatus*, Steph. (= *ochraceus*, Gyll.), while the form with the smooth thorax he calls *v. nitidicollis*, nom. nov. (*v.* Best. Tab., Heft LXIV, 1908). He is probably mistaken about *angustatus*, Steph., as our common insect is the form with the smooth thorax. I have seen very few of the other form, at all events it is very rare in the South of England. He may very possibly be right as to *ochraceus*, Gyll. E. A. NEWBERRY, 13, Oppidans Road, N.W., August 13th, 1914.

Nomiades semiargus Rott., in Kent.—I have recently had an opportunity of examining a specimen of this scarce butterfly, which is said to have been captured on the chalk-hills that form the back-bone of Kent, at a point a few miles east of Maidstone. The specimen is a female, in poor condition, and has unfortunately lost both antennæ. It is without any data label, but the fortunate captor (Mrs. G. H. Green) assures me that there can be no mistake as to the locality, for she has collected in no other, and her collection (which is a small and rather casual one) does not contain any material from extraneous sources. She cannot be sure of the date as she had no idea of the value of the capture at the time, and, in fact, identified it within the last few weeks only, on the acquisition of a copy of South's excellent volumes on British *Lepidoptera*. But the specimen is believed to have been taken within the last three years. South, writing in 1906, states (on the authority of Tutt) that *semiargus* "was taken near Cuxton in Kent, some thirty-five years ago," which—with the exception of some Glamorganshire examples taken in 1877—appears to be the most recent capture in Britain. The present specimen must, under any circumstances, have been living in Kent two decades after that date, if not very much more recently. It seems possible that it may still survive on some of these rough hill pastures that have remained uncultivated for centuries.—E. ERNEST GREEN, Camberley: July 23rd, 1914.

Parascotia fuliginaria, L., at Camberley.—A specimen of this scarce Hypenid moth flew into my room, at midnight, yesterday. It pitched on the wall, with its wings fully extended and adpressed closely to the support, in which position it resembled a Geometrid. According to South, Camberley appears to be a favourite locality for the species. He records eight specimens, taken "chiefly

at light," in 1904-5. Possibly others may have been taken here since the publication of his volume (in 1908).—E. ERNEST GREEN: *July 24th, 1914.*

An additional note on Psylla hippophæes, Forst.—Mr. C. Morley's note on *Psylla hippophæes* (*ante*, p. 205) needs a further reference to add to its completeness. I found this insect commonly on *Hippophæe rhamnoides* on the Camber Sandhills, near Rye, in June, 1882, and it is therefore included in the list of the Homoptera of Sussex in the Victoria History of that county. This record would have been included in Edwards' "Homoptera of the British Islands," but that at the time of the publication of that work, I did not know the *Psyllina* would be included in it. Of the *Hippophææ* above-mentioned there were but a few bushes, and these were some years ago rooted up in the interests of golf, and the insect has consequently become extinct in East Sussex.—E. A. BUTLER, 56, Cecile Park, Crouch End, N.: *August 4th, 1914.*

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *Thursday, July 9th, 1914.*—Mr. A. E. GIBBS, F.L.S., F.Z.S., Vice-President, in the Chair.

Mr. Newman exhibited living larvæ of *Gastropacha ilicifolia* and *Deilephila galii* with the parent imagines of the former species, together with a curiously suffused and obscure form of *Dianthæcia capsicola*. Mr. Newman demonstrated a method of killing Anthrocerids (Zygænidæ) by immersion in petrol for a few moments, which appeared to be quite successful. Mr. H. Moore, a living specimen of *Phymateus ægrotus*, a large Orthopteron from the Cape. Mr. J. Platt Barrett, living mole crickets, *Gryllotalpa vulgaris*, small larva and ova shells of *Melanargia pherusa*, a large centipede, etc., all from Sicily. Mr. W. West (Ashtead), the *Phylloxera* of the oak, *P. punctata*. Mr. Step, several Hemipterous pests, including *Phyllaphis fagi* in masses under leaves of beech, and *Phyllopsis fraxini* in a similar manner under leaves of ash, with *P. fraxinicola* and *Pediopsis tilix*. Mr. E. Adkin, a bred series of *Celastrina* (*Cyaniris*) *argiolus*, from 1913 autumn larvæ on ivy, one or two of which were of the facies of the autumn emergence. Mr. Hy. Turner, the whole of the plates of Rösel's "Insekten belustigung," 1746 (1)–1761, with Kleeman's additional volume of plates and an autograph letter *re* the volume, from W. Spence, 1812. Mr. A. E. Gibbs, a drawer of species and forms of *Parnassius*, including *P. mnemosyne*, *P. apollo*, *P. stubbendorfi*, *P. delphi*, *P. apollonius*, *P. imperator*, *P. hardwickii*, *P. discobolus*, *P. romanovi*, etc. Mr. Step read a Report of the Congress of the S. E. Union of Scientific Societies held at Bournemouth, June 10th–13th, at which he and Mr. Hy. J. Turner attended as the Society's delegates.—HY. J. TURNER, *Hon. Secretary.*

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, May 6th, 1914.*—Mr. G. T. BETHUNE-BAKER, F.L.S., F.L.S., President, in the Chair.

Messrs. E. W. Adair, Accolani Gardens, Shubrah, Cairo; Charles Percival

Emmett, 2nd Lieut., East Surrey Regt., c/o Messrs. Cox and Co., 16, Charing Cross, London; and F. H. Gravely, The India Museum, Calcutta, were elected Fellows of the Society.

The death was announced of the Rev. E. N. Bloomfield, M.A., one of the oldest Fellows of the Society.

Mr. C. B. Williams exhibited the larva, cocoon, and male and female adults of a dark olive-chocolate variety of *Lasiocampa quercus*, and read notes, Dr. F. A. Dixey, drawings of the specialised scales from the "greasy patch" on the fore-wing of *Ornithoptera priamus* f. *euphorion*, Gray, ♂, and from the fold of the hind-wing of *Cosmodesmus macleayanus*, Leach, ♂, *C. sarpedon* f. *choredon*, Feld., ♂, *C. eurypylus* f. *lycaonides* Rothsch., ♂, and *C. eurypylus* f. *lycaon*, Feld., ♂. Mr. S. A. Neave, some flies of the Asilid genus *Hyperechia* from Mlanje, Nyasaland, and also nine examples of three species of *Hyperechia* captured "with prey," pointing out that in every case the prey is Hymenopterous. Prof. Poulton drew attention to an observation sent to him by Miss Margery G. Farnell, writing April 15th, 1914, from Allerford, Somerset:—"Suddenly on a rather damp path and flowerbed a wriggling mass of Tipulid larvæ appeared. They are there in millions. Yesterday we swept up two barrows full and gave them to the trout, hoping they will devour them. Fresh ones wriggle to the surface every minute." Prof. Poulton read a record of observations, received from Mr. W. A. Lamborn, on the method by which Tachinid flies escape from the mud cells of *Eumenes*, and on the habits of the wasp, *Belenogaster juncus*, F., and the attacks of Tachinid flies upon it. He also gave an account of a correspondence bearing upon the Association between fungi and ants, and read letters bearing on Entomology in Tropical Africa. The following papers were read, both being illustrated with the Epidiascope:—"New species and sub-species of *Pierinæ*," by F. A. Dixey, M.A., M.D., F.R.S., Fellow of Wadham College, Oxford; "On the Taxonomic Value of the Genital Armature in Lepidoptera," by G. T. Bethune-Baker, F.L.S., F.Z.S., President of the Entomological Society of London.—GEO. WHEELER, *Hon. Secretary*.

THE GEOGRAPHICAL DISTRIBUTION OF *DANAIDA PLEXIPPUS*, L.
(*DANAIS ARCHIPPUS*, F.) WITH ESPECIAL REFERENCE
TO ITS RECENT MIGRATIONS.

BY JAMES J. WALKER, M.A., R.N., F.L.S.

(Continued from page 193.)

THE EASTWARD MIGRATION OF *DANAIDA PLEXIPPUS*.

I. BERMUDA, THE AZORES, AND THE CANARY ISLANDS.

Turning now to the wanderings of *Danaida plexippus* eastward from the American Continent, we are not surprised to find that at the Bermudas, the first island group encountered in this direction, the butterfly has been long established as a resident, and together with its

food-plant has found there a congenial home. It would indeed be remarkable if this strong-flying insect had not many times succeeded in making the passage thither, with the aid of the heavy autumnal gales which sweep across the 650 miles of ocean that separate the coast of Carolina from the Bermudas, and carry to the Islands so many species of North American birds of limited powers of flight, and even swarms of such a small and feeble butterfly as *Terias lisa*, Boisd. (cf. Wallace, *Island Life*, ed. 1892, p. 269; J. Matthew Jones, *The Naturalist in Bermuda*, p. 120). The notice of our butterfly as observed by Mr. Jones in Bermuda, is as follows (*l.c.* pp. 118-9):—

“Of the few species of Diurnal Lepidoptera frequenting the Islands, the Archippus butterfly (*Danais Archippus*) ranks first for size and beauty. This fine species, which is so frequently seen in the southern states of America, is also common in the Bermudas, and generally to be found where a patch of ipecacuanha is in bloom. Mr. Hurdis’ note-book has the following:—‘Dec. 18. The beautiful caterpillar of *D. Archippus* is still common’ (here follows a brief description of the larva and pupa). ‘The favourite food of the caterpillar is the curascoa swallow-wort or bastard ipecacuanha (*Asclepias curassavica*) which grows wild in pastures, gardens, and roadsides, and blossoms during every month of the year. The perfect insect is abundant throughout the year.’” *D. berenice*, Cram., a well-known species from the warmer parts of America, is recorded (*l.c.*, p. 119) as “of rare occurrence in the Bermudas.”

We owe the first record of *Danaida plexippus* from the Azores to Mr. F. Du Cane Godman (*The Natural History of the Azores or Western Islands*, pp. 101-2). Under “*Danais archippus*, F.,” he writes—“I met with only two specimens of this insect, neither of which did I catch myself. One was taken in Flores in 1864, the other kindly given me by Mr. J. Dabney of Fayal, where it had been caught the previous summer (1864). Both specimens are females . . . I do not regard the species as established in the Azores, though the fact of its having been obtained from two islands so widely separated is a curious coincidence, and not easily accounted for. I met with no one who knew the insect or had ever seen it before. I may also add that there is regular communication between North America and the Azores.”

A subsequent capture of the butterfly in these Islands is noted by Dr. W. J. Holland (*Twenty-fourth Annual Report of the Entomological Society of Ontario*, 1893—“The insects taken by the United

States Eclipse expedition of 1889, at the Azores, numbered among them two specimens of this butterfly. There were only about a dozen specimens of insects taken at the Azores by the industrious naturalists of the party, and I judge that it must be common there. Why we have not heard of its domiciliation on the African continent is a mystery to me. It will no doubt get there before long." It is not, however, enumerated in the list of species of *Lepidoptera* met with in the Azores by Dr. Ernst Hartert and Mr. W. R. Ogilvie-Grant in March and April, 1903 (Warren, *Novitates Zoologicae*, vol. XIII, pp. 439-447), and is probably little more than a casual wanderer to these Islands; neither is *Asclepias curassavica* included in Mr. H. C. Watson's catalogue of the Azorean plants in Mr. Godman's book, though he notes (pp. 194-5) *A. (Gomphocarpus) fruticosa*, L., from Fayal, but as "only a casual escape from gardens."

At the present time the Canary Islands are the head-quarters of the butterfly in the Eastern Atlantic region, though I have not been able to ascertain the exact time at which it first reached these islands, or at any rate was first observed there. I had no record of its occurrence in the Canaries in my former paper (1886), but my friend Prof. Poulton writes (Bedrock, April, 1914, p. 42, footnote)—"I saw it myself in Grand Canary in 1888," and in February, 1889, I was shown at Gibraltar several specimens that had been taken in Teneriffe only a short time previously. It would appear, as well as its food-plant, to have increased and multiplied rapidly since that time, for in 1894 we find Mrs. A. E. Holt-White (The Butterflies and Moths of Teneriffe, pp. 44-46) writing as follows—"The larva . . . lives and feeds gregariously on the 'Arbol de Seda' (silk-tree, *Asclepias curassavica*), a plant bearing a very bright red and gold flower . . . A brood seems to emerge about every three months in most years from February to September. The butterfly frequents flower-gardens and fields near the coast, not often being found more than seven or eight hundred feet above the sea." Subsequent records from the Canaries agree as to its now being one of the common butterflies of the Islands, and Mr. A. E. Elliott (Ent. Mo. Mag., vol. XXXVIII, p. 131) notes it as being "fairly common and widely distributed" in the winter months of 1901-2.

I can find no record of the occurrence of *Danaïda plexippus* in Madeira, though as long ago as 1885 I was shown in an English greenhouse a vigorous plant of *Asclepias curassavica* which had been brought from that island.

II. THE BRITISH ISLANDS.

The recorded occurrences of *Danaïda plexippus* in our islands, which I have been able to collect from the various entomological magazines, &c., may be conveniently presented in the following table:—

DATE.	LOCALITY.	AUTHORITY.	WHERE RECORDED.
1876, Sept. 6	Neath, S. Wales	J. T. D. Llewellyn	Ent. Mo. Mag., IX, pp. 256-7.
" Sept. (2nd week)	Keymer, Sussex	F. Bond	Entom., X, p. 73.
" Oct 17th	Hayward's Heath, Sussex	Rev. T. E. Crallan	Entom. IX, pp. 265-7.
1876-7	Poole, Dorset	Rev. A. E. Eaton	Ent. Mo. Mag., XXII, p. 161.
1881, Sept. 21st	Snodland, Kent	J. Jenner Weir	Entom., XIX, p. 12.
1884, Sept. 12th	Ventnor, I. W.	D. Westropp	Ent. Mo. Mag., XXI, p. 202.
1885, August	Exmouth, Devon	Rev. J. Hellins	Ent. Mo. Mag., XXII, p. 211.
" Sept. (early)	Ventnor, I. W.	J. Jenner Weir	Entom., XVIII, p. 306.
" Sept 17-24th	Lizard, Cornwall (3 specimens taken, another seen)	A. H. Jenkin	Entom., XVIII, pp. 291-2.
" Sept. 21st	Land's End, Cornwall	R. J. Anderson	Entom. XVIII, p. 291.
" Sept. 26th	Parkstone-on-Sea, Dorset	T. G. Cuthell	Ent. Mo. Mag., XXII, p. 134.
" Sept. (end)	Castlenartin, Pembrokeshire.	Rev. Clennell Wilkinson	Entom. XIX, p. 298.
" Sept. (end)	Downerry, Cornwall	F. F. Freeman	Proc. Ent. Soc. Lond., Oct. 7th, 1885.
1886, Aug. 19th	Swanage, Dorset	J. E. Mowlem	Entom., XIX, p. 247.
" Sept. 30th	Bournemouth, Hants	W. McRae	Entom. XIX, p. 277.
" Oct. 2nd	Guernsey, Channel Is.	W. A. Luff	Entom. XIX, 278.
" Sept. or Oct.	Lizard, Cornwall (seen)	A. H. Jenkin	Entom. XIX, 276.
(No date)	Cornwall	Mr. Saundry	Entom. XXIX, p. 59 (Tugwell's sale).
(No date)	Shanklin, I. W.	J. A. Billings	Entom., XX, p. 39.
1887, Sept. 14th	Worthing, Sussex (one taken, another seen)	F. H. Stewart	Entom. XXI, p. 321.
1890, Oct. 2nd	Eastbourne, Sussex (seen)	A. H. Clarke	Ent. Mo. Mag., XXVI, p. 327.
1895 (<i>circa</i>)	Shanklin, I. W.	Hubert F. Poole	Guide Nat. Hist., I. of Wight, p. 398.
1896, May 28th	Lymington, Hants	E. G. B. Meade-Waldo	Field, June 6, 1896.
" Sept. ...	Lizard, Cornwall (seen)	A. H. Jenkin	Entom., XXVI, p. 327.
1908, Sept. 13th	Culver Cliffs, I. W.	Hubert E. Poole	Guide, Nat. Hist., I. of Wight, p. 398.

It will be seen at once that of the twenty-nine specimens enumerated above as having been captured or seen within the limits of the British (and Channel) Islands, every one has occurred in a maritime county, and with only two or three exceptions, on the coast itself. Cornwall heads the list with nine records, the Isle of Wight and Sussex have five each, Dorset three, Hants and South Wales two, and Devon, Kent, and Guernsey one apiece. The absence of any records from Ireland is noteworthy, especially when the relatively large number of captures in the western parts of England is taken into account, but this may well be due to the lack of observers on the Irish coast.

III. THE CONTINENT OF EUROPE.

The number of specimens of *Danaida plexippus* that have reached the shores of Continental Europe is unaccountably small in comparison with the fairly numerous occurrences of the butterfly in Britain. I am unable to add any further records to those of its capture by M. Grassal, in La Vendée, Western France, in September, 1897 (Baret, *Pet. Nouv. Entom.*, II, pp. 253-4); my own note in this Magazine (vol. XXIII, p. 162), on the specimen taken by Lieut. C. H. Cochran, at Gibraltar, on October 24th, 1886, almost on the day of my arrival there from England; and the record by the late Mr. H. Goss (*Entom.*, vol. XX, p. 106) of the capture by Mr. Geo. D. Tait of a ♀ specimen, on September 29th, 1886, in his garden at Oporto.

THE RANGE OF *DANAIDA PLEXIPPUS* IN THE NEW WORLD.

Before proceeding to enquire into the agencies that have been the cause of the spread of our butterfly to the remote shores it has now reached, it is desirable to indicate the limits of its distribution throughout the two Americas. In this connection I follow Scudder, Poulton, and other recent authors in regarding *D. erippus*, Cram., the predominant form in the eastern and southern portions of South America, as a geographical race of *D. plexippus*, though it is separated as a distinct species by Haensch (Seitz, *Macro-Lep.*, America, p. 113).

Throughout the whole of the warmer parts of North America we find the butterfly generally distributed and often very abundant. Its range extends southward through the West Indies and Central America beyond the Isthmus of Panama, and northward into the Dominion of Canada as far as Moose Fort at the south end of Hudson's Bay in lat. 50° 20' N. (J. Jenner Weir, *Entom.*, Vol. XVIII, p. 51), and according to Dr. Scudder (*l.c.*, p. 728), still further north to the Athabasca country in about lat. 58°. It is, however, more than probable

that in these remote northern localities it is not a resident species, but a migratory straggler. On the Pacific coast it reaches at least as far north as Vancouver Island, where it is no doubt resident, although I did not have the good fortune to see it when I was there in 1882. In South America its range extends southward from the Isthmus to the estuary of the Rio de la Plata, where, at Monte Video, I saw it commonly in 1880, and, on the authority of Berg (Seudder, l.c., p. 728), through Southern Argentina into Patagonia. On the western side of the continent, where it assumes the form *nigrrippus*, Haensch (Seitz, l.c., p. 113), characterised by having the fulvous subapical spots in the fore-wings replaced by white, it appears to stop short at Southern Peru, being for some unaccountable reason absent from Chili. Finally, the stormy winds of the South Atlantic have in one instance at least carried the southern representative of *D. plexippus* as far as the Falkland Islands, in lat. 52° S, long. 69° W. In the "Proceedings of the South London Entomological Society" for May 26th, 1892, we read that "Mr. J. Jenner Weir exhibited a specimen of *Anosia plexippus*, L., var. *erippus*, Cramer, which had been obtained by one of the employés of Captain Parke in the Falkland Islands During Captain Parke's residence in these islands for about twenty years he had never seen a specimen of the *Anosia* in question; it therefore appears that, like its northern representative, the true *Anosia plexippus*, the southern form had the migratory habit similarly developed."

Taking the interval between the extreme northern and southern points at which it has been observed, it will be seen that *Danaida plexippus* has the wonderful range in latitude of over 110°. This is at least as great as that of the cosmopolitan *Pyrameis cardui*, whose range extends as far north as, and perhaps beyond, the Arctic Circle, its limits to the south being New Zealand and Tasmania.

OBSERVATIONS OF DANAIDA PLEXIPPUS AND OTHER INSECTS AT SEA.

The observations on insects alighting on ships in the open ocean, commencing with the classical instance recorded by Darwin (Naturalists' Voyage, ed. 1901, p. 158) of a large grasshopper or locust which flew on board the "Beagle" when 370 miles from the African coast, are too numerous for quotation, but I venture to give here my own experiences in this respect. On the outward voyage of H.M.S. "Kingfisher" in 1880, in about lat. 44° N., long. 23° 30' W., my diary notes—"a *Sphinx convolvuli* seen flying wildly and strongly about the ship," the nearest islands to windward being Graciosa and

Terceira in the Azores, each distant fully 350 miles. A few days afterwards, in lat. 6° N., long. 27° W., at a distance of 720 miles from the nearest point of the coast of Africa, I saw a butterfly on board which I failed to secure, but which was almost certainly the type-form of *Danaida chrysippus*, L.—the only alternative being *Hypolimnas misippus*, L. ♀—neither of which I had observed at the last port we had left, S. Vincente in the Cape Verde Islands.* On approaching Monte Video, in a part of the South Atlantic where this phenomenon was observed as long ago as Cook's first voyage in 1768 (*cf.* Journal of Sir J. Banks, pp. 44–45), and on many occasions since, quite a number of moths of small or moderate size and mostly in good condition came on board the ship, we being then some 120 miles from the coast. Lastly, when on a voyage from San Francisco to Callao in 1882, a fine specimen of the well-known large Noctuid moth *Erebus odora*, L. (now in the Oxford University Museum) was taken in lat. $12^{\circ} 30'$ N., long. 106° W., more than 250 miles from the coast of Central America, from whence alone it could have come.

The records of the appearance of *Danaida plexippus* over the open ocean in many cases at a distance of hundreds of miles from the nearest land, are of especial importance as bearing upon the question of its vastly extended distribution in recent years. I have already alluded to the records by Mathew (*Ent. Mo. Mag.*, vol. XXII, p. 221) and by Scudder (*ante*, p. 187) of its occurrence, presumably on migratory flight, over wide stretches of the Pacific Ocean. Similar observations from the Atlantic Ocean are by no means wanting, and are, if possible, of even greater interest; some of these records may be quoted more or less in detail.

In the "Canadian Entomologist" for July, 1880 (vol. XII, p. 137), Mr. G. J. Bowles writes of one of these captures at sea—"Its powers of flight will hardly be doubted by any one who has attempted to catch it on the wing. But a stronger proof some of you have had in the exhibition of a *D. Archippus* some years ago by Mr. Pearson of Montreal, which had been captured on board a ship in the Atlantic, hundreds of miles from land." Mr. J. E. Robson in the "Young Naturalist" for 1887 (vol. VIII, p. 118) states as follows:—"I often have butterflies and other insects brought to me by seafaring friends, some of whom take the trouble to mark the latitude and longitude where the specimens were taken, or the distance from the

* In June, 1893, I again saw one or other of these butterflies on board H.M.S. "Tyne" in the Indian Ocean about 150 miles S.E. of Cape Guardafui, which had probably been carried out to sea by the strong south-west monsoon prevalent at the time.

nearest land. In the course of the last ten years several examples of this handsome butterfly have been so brought to me, one being marked 600 miles from Cape Race,* the nearest land! The specimen is in good condition, being only slightly rubbed in one place, probably by the fingers of the captor, unused to handling such fragile creatures."

In our own pages we have the record by Mr. G. A. Harker (Ent. Mo. Mag., vol. XXIX, p. 86) of the capture of a specimen some years previous to 1893, off the coast of Portugal, sixty miles from Cape St. Vincent—a position from which a flight of two or three hours at most would have brought the insect safely to land. Still more interesting is Mr. C. G. Barrett's record in the same volume (p. 163) of "several specimens of *D. Archippus* of the North American type" having been taken about the year 1880 on a vessel bound from Glasgow to New York, "upon the Atlantic, at a distance of from 200 to 300 miles from the British shores." Mr. Barrett continues—"There can, I think be no doubt, that these were a portion of a migratory swarm on its way here. Yet it is curious that no specimens appear to have been seen in Ireland." For myself, I think we have here a clear case in which a number of these butterflies had almost completed their perilous voyage across the Atlantic to our shores, when an observer on an *outward-bound* ship had the good fortune to encounter them.

The last observation to which I shall refer, by Mr. G. F. Mathew (Entom. Rec., vol. XV, p. 162), is also of very great interest, as being the sole record of *Danaida plexippus* from the Mediterranean region—"While looking through my journal for notes . . . I came across the following, which was written on November 8th, 1897, while we were steaming through the Grecian Archipelago. I intended to send a note of it to one of the entomological magazines at the time, but did not do so. The entry reads, '*Auosia plexippus*.—One of these butterflies flapped slowly over the ship, not more than ten yards above my head, and I had a good view of it, and feel confident it was this species, with which I am well acquainted. The day was bright, hot, and calm. When I was in the Pacific, between 1881-4, I often saw these butterflies passing over, or flying about, the ship, when we were miles from any land, so I do not think it likely I was mistaken. But where can this one have come from, the east or west?'"

* Mr. A. H. Swinton kindly informs that in 1909 he received a specimen of *Danaida plexippus* taken by his nephew at Cape Race. I do not think that the butterfly has been as yet recorded from Newfoundland.

THE "MEANS OF DISPERSAL" OF *DANAIDA PLEXIPPUS*.

We now come to the consideration of the agencies by means of which our butterfly has been enabled to accomplish its voyages across the ocean, and in so many cases to found successful and flourishing colonies in regions far remote from its present head-quarters. This subject was discussed by Mr. W. L. Distant in a very able and interesting paper entitled "The Geographical Distribution of *Danaïs Archippus*" (Trans. Ent. Soc. Lond., 1877, pp. 93-104), not long after the wanderings of the insect had begun to attract the attention of entomologists.

Like myself, Mr. Distant is strongly disposed to believe that it is quite within the power of *Danaida plexippus*, aided by favourable circumstances of wind and weather, to cross even the wider parts of the great oceans. He writes (l.c., p. 95): "That the winds alone are a great agency of dispersal with the *Lepidoptera* cannot be doubted with the number of authentic records we have of butterflies and moths being found far at sea and great distances from the nearest land; and it will readily be understood that butterflies of high and strong flight, especially when at certain seasons they become gregarious, must have a greater chance of being borne on the wings of a strong wind or carried away by a sudden gale than those insects whose flight is low, or whose habits are more solitary and secluded. Now we know that *D. Archippus* has a powerful flight, often sailing with wings expanded high in the air We also learn from Mr. Riley that the butterfly appears in large beives or flocks almost every year in some part or other of the west Mr. Riley further remarks, 'this assembling' in large flocks at a considerable height would always be a source of danger to them, when overtaken by a gale of wind, when there would be a great probability of their being carried out to sea' Winds alone can scarcely be considered the only cause of the migration of butterflies over large areas of sea, though of the highest efficacy for the purpose. When met with far away from land they seem glad to alight on the vessel for rest, and no doubt vast numbers must succumb to the waves; for apart from the vigour required to sustain such a long flight, the spray in rough weather would sufficiently damp their wings to prevent any onward progress, and very rarely would one be able to survive the long flight across the breadth of the ocean."

Whatever might be the fate of the butterfly attempting to alight on the surface of the sea when at all rough, the following observation by Dr. Seitz (Macro-Lep., Palæarctic Region, I, p. 77), "I very often

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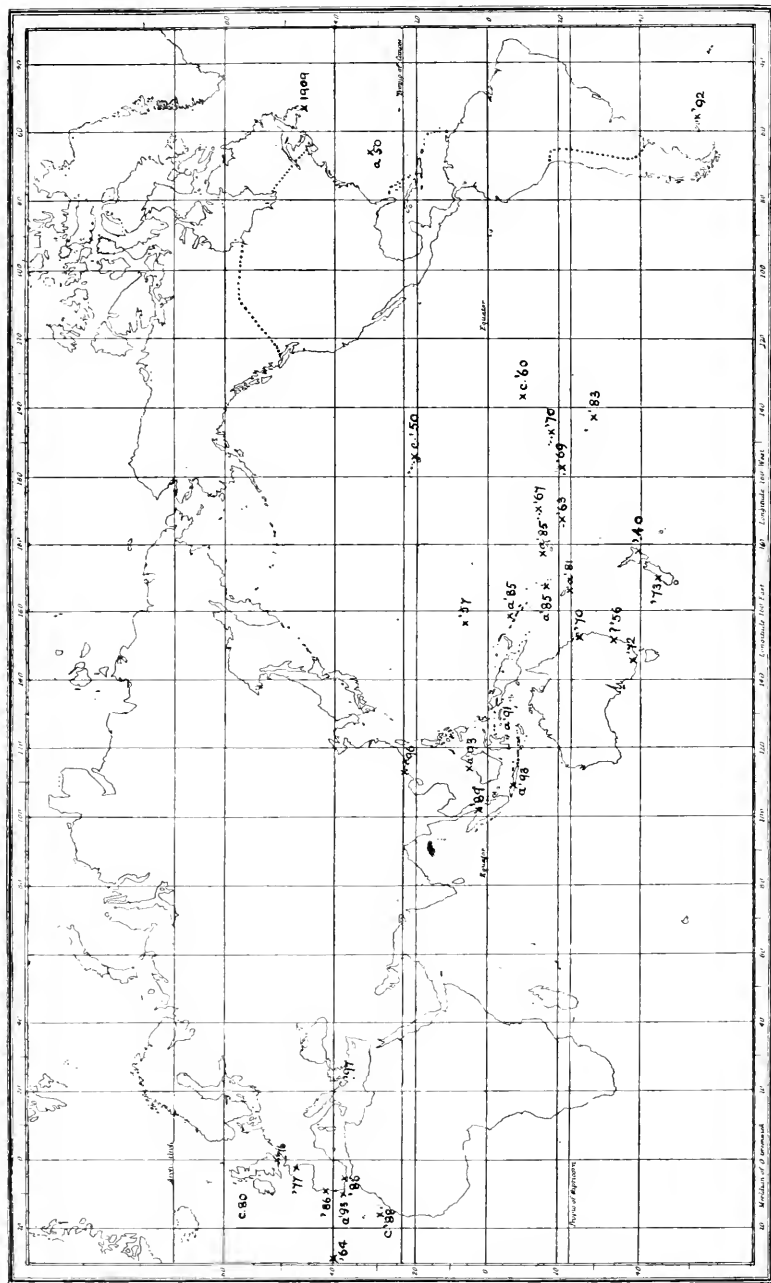
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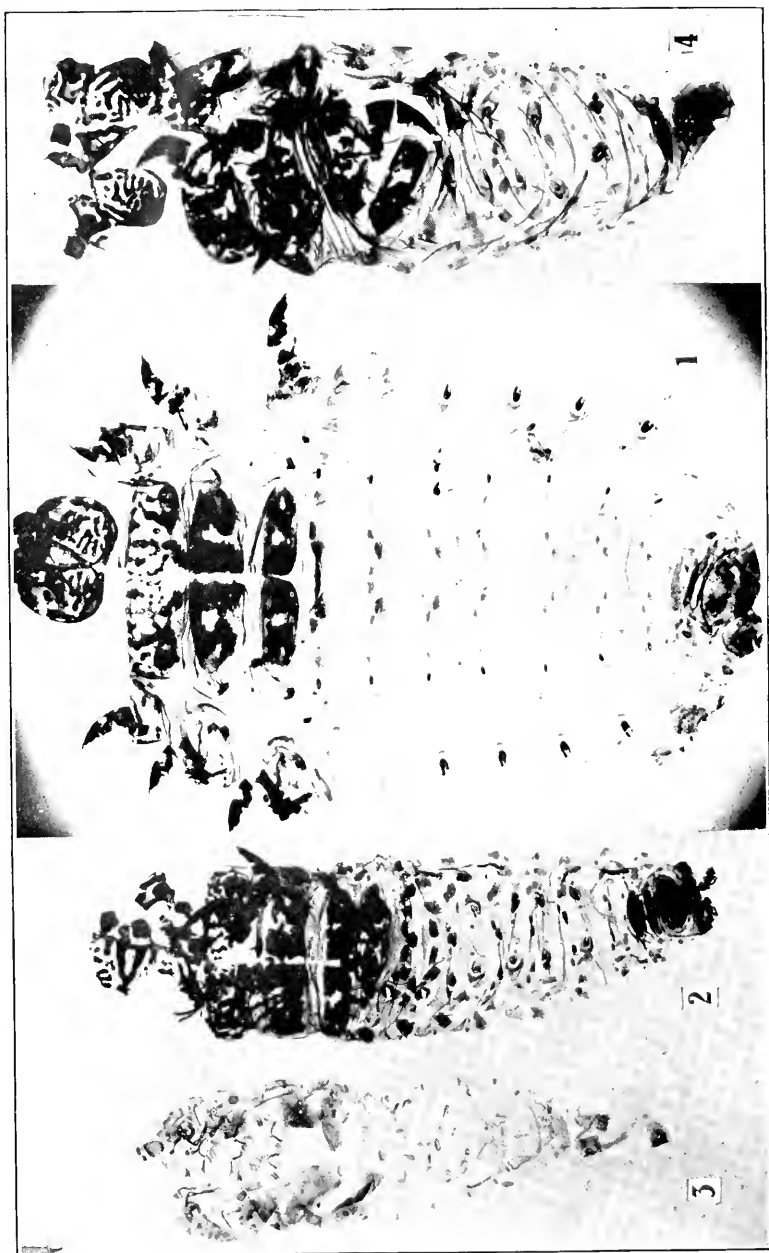
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SKETCH-MAP SHOWING DISTRIBUTION OF DANAIDA PLEXIPPUS.



Photo, F. N. CLARK.]

OREOPSYCHE PYRENAELLA, H.-S.

saw *plexippus* at sea flying at a very considerable height, and observed that it could settle on the surface of the water with the wings expanded and rise again without difficulty into the air," would suggest that not only is it quite able to do so with safety in calm weather, but that it might even be able thus to obtain a certain amount of needful rest. It is evident that a rest of this kind might be of material assistance to a migrating butterfly in effecting a long sea passage.

Dr. Scudder is not disposed, however, to admit of the butterfly being able, by its unaided flight, to cross more than a moderate extent of ocean. I give here his views in full (l.c. pp. 733, *et seq.*):—

"I have spoken of the extension of its natural region as one due to commercial agencies, because it would seem that the distance to which the insect has been carried must be due to something more than its very remarkable powers of flight. The fact that the butterfly has been seen flying at sea five hundred miles from land is a sufficient proof of the latter, and we should be far from questioning its power to compass with no very great difficulty one-half the extreme distances to which we know it has been carried without power of alighting. But that this should occur with a female heavy with eggs (and no other supposition would permit us to understand its subsequent propagation in the regions visited) is past credence; more especially as we have in the instance of its transport from the Hawaiian Islands to the Caroline group an almost certain proof of the method of its transport, through artificial aid. The alighting of one of these butterflies laden with fertile eggs, upon some part of a vessel or within its hold would by no means be a strange occurrence, and this is all that is necessary to explain its transport over the wider regions. That having once established itself in the Micronesian Islands it could easily spread over the whole of Polynesia through the insect's ordinary powers of flight, will not be questioned. But that this has taken place not only within historic times, but within the last twenty or thirty years, as has been shown by Semper, is an almost direct proof that its first introduction to the South Seas was by artificial means; for if it could be brought about solely by the power of flight of the insect, aided by the natural currents of the air, it would have happened long ago, and the fact that the insect has been able to establish itself wherever it chose when it got a foot-hold, and that it has not until a recent period established itself, are sufficient proofs that commercial agencies, so much more abundant in later times than formerly, have been the great means of introducing these butterflies to the islands of

the Pacific. It is highly probable that it owed its first introduction to the Hawaiian Islands to similar agencies, and that its appearance in Europe is due to the same cause."

As far as I am aware, we have no proof of the "æstivation" of this, or indeed of any butterfly, and I much doubt the probability of the perfect insect remaining quiescent on or in any part of a ship in the tropical regions, as suggested above by Dr. Scudder. In a voyage of any length, too, it would be always exposed to the risk of being sooner or later blown away from the vessel. Darwin (l.c., p. 158, foot-note) writes, "The flies which frequently accompany a ship for some days on its passage from harbour to harbour wandering from the vessel, are soon lost, and all disappear." On the other hand, a ship in mid-ocean may well form as welcome a resting-place for a wandering butterfly as for a migrating bird, and may be at times the means of enabling either to reach a new land.

The probability of *Danaida plexippus* being transported in its early stages is, I think, even less than in the case of the imago. In the warmer parts of its range, the whole of its transformations, from the laying of the egg to the emergence of the perfect insect, are effected in six weeks or even less (Ent. Mo. Mag., vol. XXII, p. 218), the eggs hatching in from four or five days to a week, and the pupa state lasting two or three weeks at most. Thus in the event of the pupa (*cf.* Seitz, Macro-Lep., Pal. Region, I, p. 77, footnote), or even the food-plant with eggs attached, having been included in "bales of hay" these eggs would stand a very small chance of remaining unhatched on a sea voyage of any length, and the young larvæ would almost inevitably perish. The integuments of the larva, unlike those of the imago, are very soft and tender, and readily liable to mechanical injury. Again, no one who has ever handled a living pupa or the filmy transparent shell of one that has been vacated by the perfect insect, will be likely to admit the possibility of its surviving the rough treatment it would necessarily receive if included by accident with merchandise on board ship. This also appears to me to dispose of the suggestion by Mr. Distant (l.c., pp. 97-8) as to the possibility of the butterfly, in any of its stages, being conveyed to distant lands by the agency of trees or other "natural débris" borne on the great currents of the ocean, however efficacious such means may be in the case of other creatures of a more hardy nature.

From my further experience of *Danaida plexippus*, I see no reason whatever to modify the opinion expressed in my former paper in this

Magazine (l.c., p. 222) as to its ability to traverse the spaces of ocean that divide its American home from the nearest lands east and west, by means of its own good wings, with no other assistance than the favour of the elements. To begin with, its flight, if not as rapid as that of many other butterflies, is powerful, sustained, and untiring; its habit of assembling in great swarms, and of mounting high in air, have been alluded to by every writer on its life-history; and finally, the toughness of its integuments, as well as its hardness, vitality, and longevity, are exceptional even for the highly protected family to which it belongs. Thus everything is in favour of some individuals at least of a swarm of these butterflies, blown by a heavy gale out to sea and probably carried up to a great height by ascending air-currents, surviving for days, if not for weeks, and eventually "making the land," as indeed was so nearly the case with those recorded from the Atlantic by Mr. Barrett (*ante*, p. 231). Borne on the wings of the wind, with no more exertion than would be necessary to enable them to keep their balance, they would incur very little if any damage or "waste of tissue," and on their arrival at a foreign shore, even a "female heavy with eggs" would no doubt be in sufficiently good case to found a colony, provided always that the necessary food-plant were at hand.

As it is, to say the least, very unlikely that the insect under these circumstances would be accompanied by any one of its very few parasites or other enemies, its rapid increase in many of its new homes is readily accounted for. This increase would not be checked, except as in New Caledonia by the wholesale destruction of the food-plant by the larva (*ante*, p. 190), or as at Sydney (*Ent. Mo. Mag.*, vol. XLI, p. 220) by one or other of the local parasitic insects finding out and adapting itself to the new-comer.

It is the arrival of the food-plant before that of the butterfly that, in my opinion, is the determining factor of the ability of the latter to establish itself in any new region. In every locality where it has been noted as more than a casual visitor, it will, I think, be found that either *Asclepias* or *Gomphocarpus* has arrived there before it. Now both these plants, although troublesome weeds to tropical cultivation and possessed of decidedly poisonous properties, are sufficiently ornamental to cause them to be sometimes grown as garden flowers or curiosities, and thus they may in some cases be deliberately introduced into new localities, as *Gomphocarpus* has been into New Zealand and the Azores. As regards *Asclepias curassavica*, it is not easy to fix even an approximate date for its introduction into the Pacific Islands; but

the fact quoted by Mr. Distant from B. Seemann's "Flora Vitiensis," p. 161 (1865-73) that it had been recorded from Eromanga, the New Hebrides, and the Tongan and Society groups, "probably introduced as not known to the older botanists," seems to show beyond doubt that it was there at that time awaiting the arrival of the butterfly. Besides the introduction of the plant by man, intentional or otherwise (as in the case of New Caledonia, *ante*, p. 189), it is in itself eminently adapted for dispersal by natural agencies alone. The seeds are very minute, and enveloped in a mass of silky down or cotton of the finest and lightest texture, capable of being blown, if not across the entire width of the great oceans, still for hundreds of miles before the strong and steady breezes of the intertropical regions. In one way and another *Asclepias curassavica* has already nearly completed the circuit of the globe, if indeed it has not already done so.

Thus it would appear that human agency has played not a primary, but at most a secondary part in the dispersal of *Danaida plexippus*. Many a time since the butterfly became established in North America—possibly soon after the glacial epoch—individuals or small companies have been carried with the aid of the winds to far distant lands, but these pioneers, failing to find suitable food for their progeny, have perished without continuing their race. With the great increase of communication with the Pacific Islands and coasts which commenced before the middle of the last century, this deficiency has been supplied, and we now find *Danaida plexippus* ranging over a greater extent of the earth's surface than any other butterfly, with one possible exception. Probably, too, it is only a question of a few years before vast areas in Asia and Africa, to all appearance as suitable to its existence as those it has already occupied, will be colonized by this bold and enterprising insect.

With regard to the probability or otherwise of our butterfly becoming established in Europe, I have personally no doubt as to its finding, on the shores of the Mediterranean, a climate and environment eminently suited to its requirements, in the event of its reaching that region under favourable conditions at any future time. Even if *Asclepias curassavica*, which, as we have already seen (*ante*, p. 193), had more than twenty years ago spread as far as the Suez Canal, should from any cause fail to obtain a footing farther westward, an acceptable food-plant is available in the closely allied *Gomphocarpus fruticosus*. This plant, widely distributed in Africa, is also found in Syria and Asia Minor, and I saw it many years ago growing freely in the region

of the Dardanelles. Of the other European members of the same Natural Order, *Periplocia græca*, L., extends throughout the Mediterranean region as far west as the Rock of Gibraltar, and *Vincetoxicum officinale*, Moench, is found throughout the warmer parts of the Continent, reaching as far north as Denmark and Sweden. As, moreover, according to Saunders (Scudder, l.c. p. 737), the larva has been discovered on *Apocynum androsæmifolium*, L., it is quite possible that the well-known *Nerium oleander*, and the "periwinkles," *Vinca major* and *V. minor*, also members of the Natural Order *Apocynaceæ*, would not be refused. In captivity at any rate the larva appears to adapt itself to an even more unlikely pabulum. Dr. Seitz states (Macro-Lep. Pal. Region, I, p. 76), "I have always found the larva at large on *Asclepias*, but young caught caterpillars accept as food also lettuce, thriving very well on such food." It is in the highest degree improbable, though, that the insect would take to this food of its own free will. Although both the above-mentioned species of *Vinca* are common enough in the South of England, I greatly fear that the capricious nature of our climate, especially as regards summer temperature, will effectually prevent the establishment of *Danaida plexippus* as a resident in our Islands.

In the accompanying sketch-map I have endeavoured to mark the progress of *Danaida plexippus* across the oceans, by means of the dates on which it was first recorded from the stations (marked with a small cross) mentioned in the preceding pages of this paper. The figures indicating the century are omitted, and the approximate limits of the range of the butterfly in North and South America are shown by dotted lines.

Aorangi, Lonsdale Road,
Summertown, Oxford:
August, 1914.

A NOTE ON *OREOPSYCHE PYRENAELLA*, H.-S.

BY T. A. CHAPMAN, M.D., F.Z.S.

PLATE XI.

I had the pleasure of renewing my acquaintance with this species last July (1914) at Gavarnie. I had previously found it there in 1907. In that year the cases were abundant in a small and defined area near the entrance of the Val d'Ossoue. In 1914 I looked over this area carefully and could find only one or two examples, but not

very far off, in areas approximately of similar extent to the 1907 locality it was common, but not, perhaps, so abundant as I had seen it in 1907. I think I may say that the 1914 area was practically uninhabited by full-grown cases of the species in 1907. I did not, of course, in 1907, go over the 1914 locality, saying I will take a note of this against what I may find in 1914, but I did go over much of it in order to gain some idea of the limitations of the distribution of the species in 1907.

I may add that in both years I met with a very few cases less than half grown that no doubt dated from the preceding year, and would mature in the following one. These small cases were very inconspicuous, and most examples were probably close to the ground under the herbage, so that they were probably abundant though I saw so few.

These facts strongly support the observations of M. Rondou, that this and other species of Psychids in the Gavarnie district have a life cycle of two years, and that in alternate years they appear to be absent from localities where they are not uncommon. As regards *pyrenaella*, there are localities where it occurs in the even years (1914) and others where it occurs in the odd years (as in 1907).

In the Val d'Ossoue it would appear that there is an even year area in close proximity to an odd year one. Of course, my observations, with a seven years' interval between them, might be explained in various other ways, but the one suggested agrees with M. Rondou's prolonged studies of these Psychids in this and other portions of this very interesting district.

I may digress so far as to express a wish that M. Rondou would publish some of the many interesting facts as to the insects of the central Pyrenees with which he is familiar. For example, several years ago I worked out a good deal of the life-history of *L. orbitulus*, and was unaware that its food-plant was known. M. Rondou had, however, found the larva on *Androsace* (*Gregoria*) *vitaliana*, and had bred it some years before.

These instances of species being common in alternate years and absent in the intermediate ones, which are recorded of various *Lepidoptera* besides these Psychids (the 17 year *Cicada* is an extreme example of the same phenomenon), seem difficult to understand, since we know that many species easily add a year to the time necessary to their transformation, and one would suppose that the species would be

equally common every year, although those of alternate years were not immediately descended from each other.

In the case before us, how do the races of the alternate years avoid invading the territory of each other. In ordinary cases, one is inclined to suppose that some climatic or other accident has temporarily decimated one of the alternate sets, and does so sufficiently often to keep up the appearance of alternation, just as we know that ordinary single-brooded forms are often wiped out in certain localities for often a great number of consecutive years.

When full-fed the larva of *O. pyrenaella* fixes the case amongst the upper parts of the herbage: covers it with a coating of silk, which forms a sort of cocoon with the case inside and secures it in its position. The male examples then moult, extruding the cast skins from the free end of the case. This cast skin usually falls to the ground, but occasionally remains entangled in the opening or amongst the silk of the cocoon.

The head and plates of the larva are now of quite a delicate structure compared with their previous strength and solidity. The females do not do so, but moult to pupa from the ordinary larval skin.

The males fix themselves up for pupation quite a week or ten days before the females, possibly more.

This extra prepupal moult of the males was first observed by Zeller in 1847 and has since been shown to occur in a number of Macropsychids. There is some reason to suppose that it takes place in all the Macropsychids, in so far, that so far as I am aware, its absence has not been shown in the case of any species. I think it has not previously been demonstrated in the instance before us.

It is very difficult to form any opinion as to the use of this extra moult, and why it should occur in the males and not in the females. There is no evidence that it occurs in the females except rarely as an aberration.

It is precisely similar to the extra moult that occurs in Gracilariids (*Phyllocnistis*) and to that in *Hastula hyerana*. In the latter case the larva in its prepupal instar does some actual spinning within its cocoon, and spends several months æstivating thereafter, and we may well suppose that the prepupal instar is fitted for this resting condition in a special way, that is absent in the feeding larva.

The larvæ of these Psychids seem to be identical in the two sexes as regards skin panoply, though the male may be rather smaller.

I have not met with any account of breeding any of these species from the egg, to ascertain the precise number of moults that occur. It is just possible that the smaller male is full grown one instar earlier than the female, but has been unable to drop the superfluous moult, and puts it in in this way. *Orgyia antiqua* is in the position of requiring one less moult in the male than in the female, but the superfluous moult is entirely absent in the male. Again, the male pupa (and imago) is much less bulky than the female, the extra moult may be of use in reducing the male to these smaller dimensions.

I add photographs of a prepared skin of the full-grown larva (fig. 1), of the skin cast at pupation by the female (fig. 4), and of the two skins cast by the male, one on spinning up (fig. 2), and the other (fig. 3) on pupating. It can be gathered from these figures that in the instance of any other Psychid, if a male and female case be opened after pupation (and at any time after) and the cast skins in the male and female differ as figs. 3 and 4 differ, it may be inferred that this extra male moult obtains, and it should thus be easy to extend our knowledge as to how far this curious habit is general.

DESCRIPTION OF PLATE X.

Fig. 1.—Prepared skin of full-grown larva of *Oreopsyche pyrenaella* X 10.

Fig. 2.—Skin cast on spinning up by ♂ larva X $7\frac{1}{2}$.

Fig. 3.— „ „ pupation of „ X $7\frac{1}{2}$.

Fig. 4.— „ „ „ „ ♀ „ X $7\frac{1}{2}$.

The three latter figures, of course, reproduce the imperfections due to the difficulty of unravelling cast skins.

Betula, Reigate:

September, 1914.

MICRO-LEPIDOPTERA IN THE OXFORD DISTRICT.

BY E. G. R. WATERS, M.A.

Having collected *Micro-Lepidoptera* in this district more or less persistently since 1911, I submit a list of the more interesting *Pyralides*, *Pterophori*, *Crambi*, and *Tortrices* which have come to my notice. My observations cover Oxford itself, the surrounding country to a distance of six or eight miles, and the chalk downs of Oxfordshire and Berkshire from Chinnor to Wantage.

In Oxford itself I have taken:—*Pyralis licnigialis*, Z., one fine specimen on a telegraph-pole by the canal, May 9th, 1912, an unusually early date for this

rare species; *Scoparia angustica*, Steph., *Hedya aceriana*, Dup., *H. neglectana*, Dup., *Ephestia elutella*, Hb., all in good numbers; *Bactra furfurana*, Haw., one; *Scoparia pallida*, Steph., *Paraponyx stratiotata*, L., *Schœnobijs forficellus*, Thunb., all common enough by the canal and elsewhere.

In the immediate neighbourhood of Oxford, taking a radius of about three miles, I have found the following insects, besides most of those already mentioned:—on the Berkshire side: *Crambus falsellus*, Schiff., *Myelophila cribrum*, L., locally plentiful; *Penthina fuligana*, Hb., *Orthotænia striana*, Schiff., *Catoptria expallidana*, Haw., *Eupacilia rupicola*, Curt.,* *Argyrolepis cnicana*, Dbld., *Conchylis dilucidana*, Steph., all in numbers; *Sciaphila abrasana*, Dup.,* a few; *S. conspersana*, Dougl., *Eupacilia hybridella*, Hb.* one each, and the beautiful little *Stigmonota pallifrontana*, Z.,* very local, and only found near its food-plant, *Astragalus glycyphyllos*, but flying plentifully round bushes in the afternoon sunshine; on the Oxfordshire side, *Acentropus niveus*, Ol., sometimes seen (though rarely to be caught) along the canal, *Schœnobijs mucronellus*, Schiff., *Sideria achatana*, F., *Pædisca semifuscana*, Steph., *Semasia spiniana*, Dup., *Choreutes myllerana*, F., all locally common; *Ephippiphora signatana*, Dougl., not uncommon; *Pædisca oppressana*, Tr., *Eupacilia udana*, Gn., *Argyrolepis zephyrana*, Tr., these three more sparingly; and on both sides of the county border, *Peronea schalleriana*, L., *P. comparana*, Hb., *Penthina ochroleucana*, Hb., *P. marginana*, Haw., *Spilonota rosæcolana*, Dbld., *S. roborana*, Tr., *S. trimaculana*, Haw., *Sericoris rivulana*, Sc., *S. urticana*, Hb., *Sciaphila nubilana*, Hb., *S. chrysanthemana*, Dup., *Semasia ianthinana*, Dup., *Stigmonota compositella*, F., *S. roseticolana*, Z., *Endopisa nigricana*, Steph., *Dicrorampha consortana*, Wilk., *Trycheris aurana*, F., *Eupacilia maculosana*, Haw., all well distributed and sometimes common; *Sphaleroptera ictericana*, Haw., *Pyrodes rhediella*, Cl., *Dicrorampha alpinana*, Tr., *D. politana*, Hb., *D. sequana*, Hb., *D. acuminatana*, Z., *D. simpliciana*, Haw., all locally plentiful; *Conchylis smeathmanniana*, F., *C. straminea*, Haw.,* these two scarcer than the others; *Nomophila noctuella*, Schiff., and *Scopula ferrugalis*, Hb., are common in some years, but in others are almost or quite absent.

To the west of Oxford, in the northernmost part of Berkshire, Bagley, Wytham and Tubney Woods and the wooded districts around them are rich in *Micro-Lepidoptera*. *Periniphele lancealis*, Schiff.,* is common at Tubney; *Phycis adornatella*, Tr., at Wytham; *Cryptoblabes bistriga*, Haw., occurs at Bagley, and *Alispa angustella*, Hb.,* at Wytham. Many "Plumes" are common in restricted localities; *Platyptilia bertrami*, Rsl., *P. gonodactyla*, Schiff., *Amblyptilia teucarii*, Gr., *Mimæscoptilus phœodactylus*, Hb., *M. bipunctidactyla*, Haw., *Ædematophorus lithodactylus*, Tr., *Leioptilus microdactylus*, Hb., *L. lienigianus*, Z.,* and *Acipitilia galactodactyla*, Hb. The two last named are most easily obtained in the larval stage. *L. microdactylus* sometimes flies in profusion at Tubney on favourable afternoons. The curious little *Chrysocoris festaliella*, Hb., occurs in various places, and at any time of the year from April to August. *Nephopteryx spissicella*, F., *Rhodophæa consociella*, Hb., *R. tumidella*, Zineck., *Hedya servillana*, Dup., *Penthina gentianana*, Hb., *Capua favilluceana*, Hb., *Phoxopteryx mitterpacheriana*, Schiff., *Grapholitha obtusana*, Haw., *Phlæodes immundana*, F.R., *Pædisca solan-*

driana, L., *P. profundana*, F., *Coccyx splendidulana*, Gn., *Cutoptria albersana*, Hb., and *Argyrolepis hartmanniana*, L., are all pretty general. *Roxana arcuana*, Cl., is common at Bagley, and at Tubney may sometimes be beaten out in clouds from the branches of certain oak-trees. Spruce-cones gathered anywhere in the district will produce large numbers of *Coccyx strobilella*, L.,* while *C. tædella*, Cl., and *C. nanana*, Tr. (as well as the "Spruce Pug," *Eupithecia pusillata*, F.), are plentiful. *Phoxopteryx minutana*, Haw., occurs at Tubney, and in larger numbers at Wytham; *Lobesia reliquana*, Wilk., is fairly common at Bagley; and *Eupæcilia rupicola*, Curt., and *E. notulana*, Z., are plentiful at Tubney. Other records from Tubney and its neighbourhood are: *Pædisca rubiginosana*, H.S.,* *Stigmonota regiana*, Z., *Argyrolepis cuicana*, Dbld., *Phoxopteryx lactana*, F., all in good numbers, *Phtheochroa rugosana*, Hb., *Carpocapsa splendana*, Hb., *Stigmonota nitidana*, F.; from Wytham: *Pædisca occultana*, Wilk., *Carpocapsa grossana*, Haw., *Sciaphila sinuana*, Steph., *Crambus selasellus*, Hb., *Hedya lariciana*, Z., *Eupæcilia roseana*, Haw., the last two in good numbers; and from Boar's Hill: *Ephippiphora fænella*, L., *Stigmonota internana*, Gn., *Eupæcilia nana*, Haw., all commonly, and a single specimen of *Phlæodes demarniana*, F.R.* I have taken *Stigmonota coniferana*, Ratz., on the downs near Wantage.

On a few occasions I have collected at the eastern end of the Berkshire Downs; but as this district has been worked by others much more thoroughly than by me, I content myself with recording *Dicrorampha senectana*, Gn.,* from Streatley.

In looking over this year's captures, I have just had my attention drawn to a few specimens of a beautiful *Sericoris* from Wytham, which I had hitherto thought to be particularly fine examples of *S. urticana*, Hb. On closer inspection I find that they are not *urticana*, but *S. cespitana*, Hb.*—usually a coast insect, and an interesting addition to the Berkshire list.

On the Oxfordshire side, Bladon Heath, near Woodstock, appears to be a new locality for *Coccyx pygmaeana*, Hb., which is rather common, though confined to a small area. Other Tortrices from the same place are *Capua favillaceana*, Hb., *Eupæcilia ciliella*, Hb. (common throughout the Oxford district), and *Coccyx strobilella*, L.

The Chiltern Hills between Chinnor and Goring are a fine hunting ground, offering extensive tracts of open down, as well as many miles of woodland, of beech, and other trees, with here and there rough slopes and bushy places. I am best acquainted with the Watlington and Chinnor districts, but have also made expeditions to the country round Ipsden and Nettlebed. On the open downs, *Ennychia nigrata*, Sc., and *E. cingulata*, L., are common in places, and the same may be said of *Oncocera uhenella*, Hb., *Oxyptilus parvidactylus*, Haw., *Mimæseoptilus phæodactylus*, Hb., *M. bipunctidactylus*, Haw., and *Acipitilia tetradactyla*, L. An occasional *Phycis ornatella*, Schiff., may be found among swarms of *P. adornatella*, Tr. The Tortrices most in evidence are *Eriopsela fractifasciana*, Haw., *Argyrolepis subbaumanniana*, Wilk., *Peronea aspersana*, Hb., *Phoxopteryx comptana*, Fröl., *Chrosis alcella*, Schulz, *Orthotenia striana*, Schiff., and *Aphelia osseana*, Sc., all of which are plentiful. The following insects occur in rough fields

and bushy places :—*Botys pandalis*, Hb., *B. hyalinialis*, Hb., *Crambus pinellus*, L., *Euchromia purpurana*, Haw., *Grapholitha nigromaculana*, Haw., *Dierorampha consortana*, Wilk., *Argyrolepis zephyrana*, Tr., *Conchylis dilucidana*, Steph., *Semasia rufillana*, Wilk., all common locally ; *Eupæcilia atricapitana*, Steph., common near Watlington ; *E. implicitana*, Wk., one at Highmore ; *Homæosoma binævella*, Hb., Watlington ; *Spilodes verticulis*, L., *Phoxopteryx derasana*, Hb., *Dierorampha acuminatana*, Z., and *Xanthosetia zægana*, L. In the beech-woods *Carpocapsa grossana*, Haw., *Stigmonota flexana*, Z., *Peronea sponsana*, F., and *Capua favillaceana*, Hb., are common, and each may be found at times in extreme abundance. The following also occur in woods :—*Pædisca ratzeburgiana*, Rtz., at Wyfold ; *Scoparia trunciolella*, Stt., at Chinnor ; *S. cembræ*, Haw., *Catoptria albersana*, Hb., and *Lobesia reliquana*, Wilk., at Watlington.

In the course of various expeditions to the downs near Chinnor, I have several times collected in localities near Stokenchurch, just across the Buckinghamshire boundary. As the List of *Micro-Lepidoptera* contained in the Victoria County History of Buckinghamshire is very inadequate, I give a list of the species I have noted there :—*Pyralis glaucinalis*, L., one ; *Ennychia nigrata*, Sc., plentiful ; *Scoparia cembræ*, Haw., *Oxyptilus parvidactylus*, Haw.,* *Mimæseoptilus pterodactylus*, L.,* *Aciptilia baliodactyla*, Z.,* *Crambus tristellus*, F.,* *C. geniculeus*, Haw.,* *Rhodophæa suavella*, Zk.,* *Peronea variegana*, Hb.,* *P. schalleriana*, L.,* *P. comparana*, Hb.,* *P. aspersana*, Hb.,* *Teras contaminana*, Hb.,* *Spilonota incarnatana*, Hb.,* *S. roborana*, Hb.,* *Orthotænia striana*, Schiff.,* *Hedya ocellana*, F.,* *Phoxopteryx derasana*, Hb.,* *P. lundana*, F., *P. comptana*, Fröl., *Grapholitha nævana*, Hb.,* *Eriopsela fractifasciana*, Haw., *Stigmonota flexana*, Z.,* *S. roseticolana*, Z.,* *Catoptria cana*, Haw.,* *C. hypericana*, Hb.,* *Eupæcilia angustana*, Tr.,* *E. ciliella*, Hb.,* *Chrosis alcella*, Schulz.,* *C. rutilana*, Hb.,* and *Argyrolepis subbaumanniiana*, Wilk. All the *Tortrices* in the above list occur in fair numbers. The most interesting of them are undoubtedly *S. incarnatana* and *C. rutilana* ; I am curious to know if the latter has been taken elsewhere in this part of England.

An asterisk (*) has been appended to the names of such species observed in Berkshire and Buckinghamshire as are not included in the lists of *Lepidoptera* published in the Victoria History of these counties.

If I have included many common insects among those mentioned above, it is in the hope that they may help to swell a future list of Bucks *Lepidoptera*.

40, Leckford Road,
Oxford :

September 18th, 1914.

DIPTERA FROM THE NEIGHBOURHOOD OF MARLBOROUGH,
INCLUDING ONE SPECIES NEW TO BRITAIN.

BY T. W. KIRKPATRICK.

The following is a list of some of the less common *Diptera* which I have taken this year within a radius of ten miles from Marlborough, Wilts. In addition to these I am able to record a species taken several years ago, which is new to the British list.

Trichocera hirtipennis, Siebke : I have not taken this myself, but an example was captured by Mr. E. Meyrick on July 31d, 1902, at Marlborough, which Mr. Collin kindly identified as this species. It is an interesting addition to the list of British *Diptera*.

Odontomyia argentata, Fab. : 1 ♂ on *Ranunculus* blossoms in marshy ground at Chilton Foliat, 14.5.14.

Stratiomys potamida, Meig. : 1 ♀, 4.7.14; 2 ♂, 1 ♀, 14.7.14. on the flowers of large Umbelliferae (*Heracleum*) near the River Kennet, at Marlborough.

Leptogaster guttiventris, Zett. : 1 ♀ among low herbage, 23.6.14. at Marlborough.

Dioctria ælandica, L. : common in the West Woods in June and early July. Its prey seemed to consist, in all the cases I observed, of *Pipunculus campestris*, Latr.

Isopogon brevirostris, Meig. : Abundant from July 4th to 20th in one very limited locality at the edge of a cornfield, near Marlborough.

Anthrax cingulatus, Meig. : 1 ♂ on Umbelliferae in a hedge at the foot of chalk downs, Marlborough, 20.7.14.

Neurigona suturalis, Fln. : 2 ♀ ♀, taken on *Rhamnus*, 4.7.14. near Marlborough.

Dolichopus planitarsis, Fln. : This species was common on alder leaves at Chilton Foliat on May 14th. It is generally considered somewhat rare, but is probably only overlooked, as it only occurs in early spring, and a week later had entirely disappeared.

D. longitarsis, Stan. : A pair in the same locality as the last, July 11th.

Campsicnemus curripes, Fln. : I took an example on the window of an out-house in Marlborough on February 2nd this year. A curious place and date.

Orthoneura brevicornis, Lw. : 1 ♂, May 14th, on *Ranunculus* at Chilton Foliat.

O. nobilis, Fln. : 1 ♂ on Umbelliferae at the edge of West Woods, July 2nd. This locality is not near any such marshy ground as is usually frequented by species of *Orthoneura* and *Chrysogaster*.

Chilosia vulpina, Meig. : 1 ♂, 26.5.14: In Henswood, near Marlborough, and two other males on July 7th and 8th.

C. mutabilis, Fln.: A rather small and dark ♀ on July 25th, near Savernake Forest.

Ischyrosyrphus loternarius, Müller: This was quite common during July on *Umbelliferæ* in the same locality in which *Stratiomys potamida*, Mg. occurred.

Platychirus fulviventris, Meig.: Not at all uncommon in June and July in the marsh at Chilton Foliat, but exceedingly local.

Syrphus lunulatus, Meig.: 1 ♀, 26.5.14, Henswood; 1 ♂, 10.6.14, Savernake. This species is not generally common in the south of England, though more frequent in the north.

S. nigricornis, Verr.: 1 ♂, 1.6.14, West Woods; the specimen was hovering over *Ranunculus*.

S. diaphanus, Zett.: 1 ♀ on the 9th of July, in Stype Wood; another ♀ on the 20th of July, near Marlborough. Both were on *Umbelliferæ*; the latter specimen along with hundreds of *S. ribesii* and *S. vitripennis*, among which more examples of this interesting Syrphid may very probably have escaped my notice.

S. labiatarum, Verr.: the females were not very uncommon on *Umbelliferæ*, but I only took one male.

S. umbellatarum, Fab.: 3 ♀, 4—15.7.14. These three specimens, which came from the same locality near Marlborough, though having a brightly shining thorax, differ from the ordinary ♀ *S. umbellatarum*, by having those parts of the frons which are as a rule purplish or blue, shining black.

Volucella bombylans L.: 2 beautiful ♀ ♀ of Zetterstedt's var. *hæmorrhoidalis*, var. b, on June 19th and July 6th.

Merodon equestris, F., var. *narcissi*, F.: 1 ♂ of this form at Manningford, 13.6.14. There is a small bulb-farm not far distant.

Helophilus frutetorum, Fab.: 1 ♂, 1 ♀, on the blossoms of *Rhamnus catharticus*, 2 and 14.6.14, Marlborough. It occurred together with the somewhat commoner *H. versicolor*.

Criorrhina floccosa, Meig.: 1 ♀, 12.6.14, West Woods, where I have also taken *C. oxyacanthæ* and *C. asilica*; all three species on the blossoms of *Rubus*.

Exorista vetula, Meig.: 2.5.14, West Woods.

Hyetodesia variegata, Meig.: 9.5.14, near Marlborough.

Rhacochlæna toroneura, Lw.: 1.6.14, West Woods; 1 ♂, on *Salix*.

The capture of 2 ♀ ♀ of *Chrysotoxum octomaculatum*, Curtis, at Chippenham Fen, Cambridgeshire, on July 28th, may also be worth recording, as this is, I believe, quite a new locality for this species.

The Deanery, Ely:

September, 1914.

NOTE ON *DIAZOSMA* (*TRICHOCERA*) *HIRTIPENNIS*, SIEBKE.

BY J. E. COLLIN, F.E.S.

This species stands in the Palæarctic Catalogue under the generic name *Diazoma*, Walleng., but this name being preoccupied in the Mollusca, Bergroth (Ann. Mag. Nat. Hist., 1913, p. 583) has changed it to *Diazosma*. The female ovipositor, composed of small fleshy pubescent lobes, is so completely different to the chitinous pointed ovipositors of *Trichocera* that the doubts expressed by Osten-Sacken (1887) as to the generic distinctness of the species may well be considered as removed. It has previously been recorded from only Norway and different parts of Austria. Mr. Kirkpatrick has very kindly allowed me to add the above British specimen to my collection.

Sussex Lodge, Newmarket :

September 9th, 1914.

Chionotopus, an unrecorded genus of *Coleoptera*.—Owing to a curious mistake on the part of its author, Abeille de Perrin, the genus *Chionotopus* has been overlooked and is not found in any of the successive issues of the "Nomenclator Zoologicus."

In 1891 he described the genus *Chionotopus* (Ann. Soc. ent. France, 60, p. 179) and there stated that he had named and described the genus in Ann. Soc. ent. France, 1881, p. 125. This, however, he had not done: he there merely described two species as *Malachius damascenus* and *mossulensis*, and says not a word as to their being a distinct genus, but at the bottom of p. 126 he says he thinks it may be a distinct group to be separated from *Malachius* and called *Chionotopus*. The reference for this name will therefore be "Abeille de Perrin, Ann. Soc. ent. France, 51, 1881, p. 126."—D. SHARP, Brockenhurst: Sept. 22nd, 1914

Criocephalus fesus, Kraatz, at Oxford.—On August 21st my friend Mr. T. Trollope, of Summertown, Oxford, said he had a "curious beetle" to show me. Not expecting anything rare, I was surprised and pleased when the insect was produced, to find that it was a fine and perfect living ♀ specimen of *Criocephalus fesus*, Kraatz, a very welcome addition to the local list of *Coleoptera*. The beetle was taken by Mr. Trollope's daughter on August 19th, on a window-curtain in his house, and must have come from some distance, as there are very few pine-trees in the neighbourhood of Oxford in which it may have bred.—J. COLLINS, 74, Islip Road, Sunnymeade, Oxford: September 1st, 1914.

Note on a dark form of *Hydrothassa marginella*, L., from Killarney.—Amongst some *Coleoptera* sent me from Killarney during the present year by Mr. E. Bullock

there is a female example of this species wanting the reddish-yellow margin to the thorax and elytra; it has the outer limb of the latter brassy, and of the same colour as the head, thorax, and scutellum, and the rest of the elytra greenish. Fowler states that varieties of both *H. aucta*, F., and *H. marginella*, L., occur rarely with obscure side-margins, but I have never seen an example of either of these species thus coloured. Weise notices a form of *H. aucta* (var. *a. glabra*, Herbst) with the outer limb of the elytra piceo-æneous; but the only variety of *H. marginella* described by him is nigro-cæruleous with the margins of the elytra yellowish-red. Mr. Bullock's specimen was taken from moss last January.—G. C. CHAMPION, Horsell, Woking: September 12th, 1914.

Læmophloeus ater, Ol., in pine and beech.—This species, as far as my experience goes, is usually found in stems of furze or broom, in burrows of *Phlæothorus*, but this year I have taken it from beneath beech bark at Guildford and from pine at Chobham. It is evident, therefore, that *L. ater* accompanies more than one genus and species of *Scolytidae*. In 1898, Mr. Lloyd and myself found it in abundance in furze at Chilbolton, Hants (Ent. Mo. Mag., 1898, p. 113), and I have also recorded it from beech, from Spain.—G. C. CHAMPION.

A few Coleoptera, &c., from Greywell, Hants.—My friend Mr. Barton has recorded several interesting beetles from this locality (Ent. Mo. Mag., 1910, p. 190). The following additional species have since been captured at the same place by Mr. Barton, my son, or myself. *Odacantha melanura*, *Oodes helopioides*, *Silis ruficollis*, *Anthocomus rufus*, *Ceuthorrhynchus nasturtii*, *Cionus tuberculosus*, *Apion vicinum*, *Hypocyptus discoideus*, *Stilbus oblongus*, *Haltica lythri*, *Liburnia longipennis*. Some of these insects were captured during a joint unprofitable excursion on August 29th. The marshy ground where these species occur is suggestive of the fens, and this is exemplified by the presence of the *Anthocomus* and *Silis*.—G. C. CHAMPION.

Dryophilus anobioides, Chev., near Brandon, Suffolk.—My friends Messrs. Claude Morley and Ernest Elliott found this rare species at Palmer's Heath, near Brandon, in June last. It occurred in some numbers by beating fir boughs about nine feet from the ground; few specimens were taken owing to its having been unfortunately mistaken in the field for the common *D. pusillus*. Gyll., this latter being frequent here. The disparity in size of the specimens was most remarkable, even for the *Anobiidae*, and did not depend on sex, the smaller male specimens being less than half the length of the larger. Mulsant (Op. Ent. XIII, 1863) states that the insect is found on *Pinus sylvestris*, which the above capture confirms.—E. A. NEWBERY, 13, Oppidans Road, N.W.: September 9th, 1914.

Quedius puncticollis, Thoms., accompanying *Lasius fuliginosus*, Latr.—I have on several occasions recently taken *Quedius puncticollis*, Thoms.—a well-known denizen of wasps' nests—with *Lasius fuliginosus*, near Cothill, Berks, under

conditions which led me to suppose that it is a true inmate of the nest of this ant, like *Q. brevis*, which occurred in its company, as well as *Microglossa gentilis*, Märk. (not rare), three species of *Myrmecodia*, &c. This particular nest has for two or three years past produced in large numbers two beetles not usually associated with *L. fuliginosus*, viz., *Heterothops nigra*, Kr., and *Mycetophagus quadriguttatus*, Müll.; *Microglossa suturalis*, Sahlb., is usually present in plenty. My friend Mr. J. Collins also took *Q. puncticollis* in another nest of *L. fuliginosus* some time ago.—JAMES J. WALKER, Oxford: September 8th, 1914.

A melanic form of Galerucella tenella, L.—On August 29th I swept off meadow-sweet (*Spiraea ulmaria*) at Cothill a specimen of this common species, entirely pitchy-black with the exception of the femora, which are somewhat lighter in colour, and the pubescence, which is of the normal pale-brown hue and gives the insect a peculiar mealy appearance. Except for the difference in outline, it is curiously like a small *G. fergussoni*, Fowler. Further search on the same ground has up to the present failed to produce any further examples of this interesting form.—JAMES J. WALKER: September, 1914.

Species of Cionus on Buddleia globosa.—At the beginning of last month a neighbour called my attention to a large shrub of the Chilean *Buddleia globosa* in his garden, the leaves of which were covered with brown blotches due to the parenchyma having been eaten away by some insect. Suspecting the cause, I shook the shrub into an umbrella with the immediate result of a crowd of *Cionus pulchellus*, Hbst., and its larva; this being a species I have hitherto found only on the small figwort, *Scrophularia nodosa*, growing in shady places in woods. Two other species of the genus, *C. scrophulariæ*, L., and *C. blattariæ*, F., were also present, but in much smaller numbers; the former has already been recorded by Mr. W. D. R. Douglas (Ent. Mo. Mag., vol. xxxii, p. 179) as having been found on *Buddleia globosa* in the South of Scotland. The genus *Buddleia* is now referred to the Natural Order *Loganiaceæ*, but until quite recently it was included in the *Scrophulariaceæ*; so these weevils have showed themselves to be good practical botanists in their selection of this shrub as a "substitute" food-plant. A day or two ago I was informed by a nurseryman that his young plants of *Buddleia globosa* had been so much injured by the ravages of "beetles" in the early summer, that he had been on the point of uprooting them all. On examining the new growth of the plants I at once found *Cionus pulchellus*, which appears in this case to have been the sole culprit, as my informant said that the "beetles" were all of one kind.—JAMES J. WALKER: September 20th, 1914.

Buddleia as an attraction to Lepidoptera.—The *Buddleia magnifica* of the nurserymen's catalogues—which is, I believe, a comparatively new cultivated form of the Chinese *B. variabilis*, Hemsl.—appears to possess attractions to the Diurnal *Lepidoptera* superior to those of any plant I have ever seen, with the possible exception of the Verbenaceous *Lantana camara*, L., now so universally distributed throughout the warmer parts of the world. Its large racemes of

showy mauve-purple flowers are especially favoured by the *Vanessidæ*, and during the recent hot weather of August and September, two shrubs in a nursery garden which I pass almost daily, within a few feet of the main road, as well as one in a garden close to my house, have been visited by these butterflies in such numbers as to be a very conspicuous and pleasing sight. Four or five specimens of *Pyrameis atalanta*, which appears to be more than usually plentiful this year, were sometimes to be seen on a single raceme of the *Buddleia*, and *Aglaïs urticæ*, which after more than a year of scarcity is now on the wing in its normal abundance, has been even more numerous on the flowers than the "Red Admiral." *Vanessa io*, which is much less common than usual this season, has been seen once or twice only. *Pyrameis cardui* is also an occasional visitor; this species has been commoner this year than I have ever known it to be previously at Oxford, and the brood resulting from the immigrant specimens observed in fair numbers in June is now very much in evidence in the lucerne and clover fields throughout the district, the specimens being very fine and unusually rosy in tint. The common "Whites" show an equal liking for the *Buddleia* flowers, and the shrub is one well worth growing, not only for its own sake, but for the beauty of the picture of butterfly life that it presents while it is in bloom. I have had no opportunity of examining the flowers after dark, but have no doubt as to their equal attractiveness to night-flying *Lepidoptera*. I may add that when I was at Hong-Kong many years ago, I found the white-flowered *Buddleia asiatica*, Lour., to be one of the most attractive plants to butterflies in the "Happy Valley" gardens, and noted it as the special favourite of the beautiful little long-tailed Papilionid *Leptocircus curius*, F. (cf. Trans. Ent. Soc., 1895, p. 472).—JAMES J. WALKER: *September 19th*, 1914.

Further British records of Danaida plexippus.—In connection with Commander Walker's interesting article on this butterfly I may mention that some years ago I bought in a small curiosity shop in Weymouth the wings of a specimen of *Danaida plexippus*, mounted on a square of card under glass and labelled in front "*Danais plexippus*, Weymouth, 1899," and on the back "*Danais plexippus*. Taken by George and John Joliffe on Weymouth College Cricket Ground, 1899." I have ascertained that boys of this name were at the School, and think there can be little doubt of the correctness of the label. The wings are in good condition, but probably the body, &c, had been eaten by mites, and the wings only preserved. The small dealer (in old china, furniture, etc.—not Natural History) from whom I purchased it knew nothing about the insect and only asked sixpence for it.

I have also a specimen taken by my late friend Mr. H. W. Vivian in Teneriffe, on March 21st, 1890. I remembered Mr. Vivian telling me that he had taken a specimen in England, and on enquiry find that in his British collection, which was after his death presented to, and is now in, the National Museum of Wales at Cardiff, are two specimens of *Danaida plexippus*; one labelled "Glamorgan 9.86, H.W.V.," the other "Cornwall 1886." The first was the one taken by himself, but of the other neither I nor the Museum authorities know the history. I think it is most probably a genuine British capture, as he

was a great deal in Cornwall where his father lived, and I feel sure that it would not otherwise have been placed in his cabinet with his own specimen.—NELSON M. RICHARDSON, Montevideo, near Weymouth: *September 10th*, 1914.

Nomiades semiargus, Rott., in Kent.—Mr. Green's note on '*Nomiades semiargus*, Rott., induces me at last to place on record a male specimen which I took, as a young beginner, at the end of July, 1876, while I was catching *L. icarus* on some rough pastures in south-west Kent, situated in the triangle formed by Edenbridge, Cowden and Dorman's Land. I had the specimen by me for many years, but some time ago its skewer-like pin and hopelessly rubbed and fenestrated condition, caused me, foolishly enough, to dismiss it from my collection. The place of capture was situated on the Wealden Clay, far south of the Chalk range, from which, however, it might have straggled. At the time I wondered if my school holidays had begun earlier in July I might not have found more examples. Undoubtedly this species, like other scarce allied forms, could easily be passed over as a common "Blue." It may not be so completely extinct in Britain as is generally supposed.—F. H. HAINES, Winfrith, Dorset: *September 11th*, 1914.

Tortrix pronubana, Hb., in Chiswick.—The first specimen taken here occurred on July 18th, 1907. It appears this year as if this brightly coloured species had established itself in the garden. A rather worn female was taken May 30th. In early August some larvæ were found feeding between united leaves at the ends of shoots of the Bay tree, *Laurus nobilis*. As no larvæ had been noticed feeding in this manner on this tree, some of these were kept for observation. They soon spun up and a darkly marked male *T. pronubana*, was bred on August 16th. Later three females were bred, the last on September 11th. In the opposite corner of the garden, imagines were seen September 3rd and 7th, flying in the morning sunshine. They are very conspicuous on the wing, but easily lost to sight after they have settled.—ALFRED SICH, Corney House, Chiswick W.: *September 16th*, 1914.

Abnormal coupling in insects.—One day early in July, on Dartmoor, a pair of *Argynnis aglaia* rose in front of me amongst the heather. As their colour appeared peculiar, I followed them up, thinking that one might be an unusual variety. They were wild, and only after several attempts to get near was I able to take them on the wing. In the net it was seen that in addition to the ♂ and ♀ *aglaia*, a ♂ *E. janira* was attached to these. In spite of their struggles, it was only when the ♀ *aglaia* was killed, that the *janira* became detached. The ♂ and ♀ *aglaia* remained attached for some time after they were killed. Apparent copulation between extremely different insects would seem to be very unusual, but in *Hymenoptera* I have observed two very remarkable cases: In 1893 I took a ♂ *Nesomimesa hawaiiensis* attached to a ♀ *Crabro hawaiiensis*, insects so different in build, that coupling would be deemed almost impossible. In 1911, at Dawlish, I found a ♂ *Andrena albicans* firmly attached to a hibernated ♀ of *Halictus xanthopus*. This case is the more remarkable

from the fact that the ♀ *Halicti* are fertilized in the summer, and the ♂ ♂ all perish at the approach of winter, the ♀ ♀ alone hibernating. In *Lepidoptera*, under natural conditions, I have only seen comparatively closely allied species in copula, e.g., *Triphæna comes* with *T. interjecta*, *Zygæna loniceræ* with *Z. filipendulæ*, &c. I possess the pair of *Bombus terrestris*, ♀, and *B. lapidarius*, ♂, taken in cop. by F. Smith, as recorded by him.—R. C. L. PERKINS, M.A., D.Sc., Paignton: August 12th, 1914.

Abundance of the Gooseberry saw-fly, Pteronus ribesii, Scop.—I wonder if the Gooseberry saw-fly (*Pteronus ribesii*) has been unusually abundant in the country generally this season. Here it has been very destructive, the larvæ often quite defoliating the gooseberry bushes in all the gardens (in several widely separated out-districts of the town) I have heard anything about. In my own garden the larvæ for the second brood were evidently just hatching at the time the very numerous imagines of *Abraxas grossulariata* were depositing their eggs, and by the time the latter were hatched there was little left for them to feed upon, and they very soon cleared off such leaves as were left. Probably many thousands have perished, as I think that comparatively few would have reached the hibernating stage before practically every bush was denuded of leaf. For some time now nearly all the bushes have the appearance of having been burnt, not a vestige of green being visible.—GEO. T. PORRITT, Huddersfield: September 7th, 1914.

Review.

“REPORT AND TRANSACTIONS OF THE CARDIFF NATURALISTS’ SOCIETY.”—Vol. XLVI, 1913. Cardiff: printed for the Society by William Lewis, Duke Street. 1914.

In our volume for 1913 (pp. 260–1) we had the pleasure of noticing the first instalment of the valuable list of Glamorgan *Coleoptera* by Mr. J. R. le B. Tomlin embodied in the report of the Cardiff Naturalists’ Society for 1912. Their annual volume for last year (pp. 21–51) contains a further portion of this List, from the *Staphylinidæ* to the *Georyssidæ* inclusive. As the compiler remarks, the list of *Staphylinidæ* is as yet but a poor one, and systematic collecting in the county would increase it enormously; it nevertheless includes the exceedingly rare *Philonthus pullus*, Nordm., taken on the coast by Messrs. Tomlin and Allen, besides a considerable number of other interesting species. In the Clavicorn series of families, too, the coast-frequenting forms are very well represented. Further “Entomological Notes” (pp. 97–100), including several interesting additions to the County List of *Hymenoptera Aculeata*, are contributed as before by Mr. H. M. Hallett, F.E.S.

Obituary.

Henry Herbert Lyman, M.A.—This Canadian Lepidopterist and his wife lost their lives in the appalling disaster that befell the steamer "Empress of Ireland" in the River St. Lawrence on May 29th last. He was born at Montreal on December 21st, 1854, and received his early education at the High School there, taking his B.A. degree at the McGill University in 1876, and that of M.A. in 1880. When he was only eight years of age he is said to have commenced to observe insects and their ways, and at the time of his death he appears to have formed one of the finest collections of *Lepidoptera* in Canada. The North American species of the genera *Colias*, *Argynnis*, *Grapta*, *Chionobas*, *Haploa*, *Hyphantria*, *Papaipema*, *Xylina*, and *Hepialus* were especially studied by him. The first paper from his pen, on the larva and pupa of *Grapta interrogationis*, was read at the Meeting of the Entomological Society of Ontario on Oct. 8th, 1875, and altogether 60 papers have been contributed by him to the "Canadian Entomologist," running over 26 years. In 1895 he was elected Vice-President of the Ontario Society, and from 1897–1899 served as President. Notwithstanding his increasing deafness he attended the International Congresses at Brussels and Oxford, though he could not hear a word of the papers and discussions! Lyman also occasionally visited the British Museum to compare specimens. He was elected a Fellow of the Entomological Society of London in 1901. The above particulars are taken from the account of his life given in the July number of the "Canadian Entomologist," in which a portrait is also given.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *Thursday, July 23rd, 1914.*—Mr. B. H. SMITH, B.A., F.E.S., President, in the Chair.

Mr. Newman exhibited larvæ of *Deilephila galii* reared from ova and a larva of *Acronycta alni*. Mr. West, a weevil found in papers from South Africa. Mr. Curwen, a dwarf *Polyommatus icarus* measuring 20 mm. in expanse from Piggott's Hole. Mr. Morford, a bred series of *Syntomis phegea* from ova laid by a female taken at Isella. Mr. Main, small Psychid larvæ in their little cases which had emerged from a large case (cocoon) from Lugano, with some larvæ of the fire-fly, *Luciola italica*. Mr. Blair, bred specimens of the beetles, *Crioceris lilii* (*merdigera*, Z.), and of *C. merdigera* (*brunnea*, Z.), the larvæ of the former on lilies, of the later on black bryony. Mr. Priske, living larvæ and pupæ of the beetle, *Melasoma populi*. Mr. Morford, the large Saturniids, *Philosamia cynthia* and *Antheræa pernyi*. Mr. Step, on behalf of Mr. West (Greenwich), a large mass of aberrant growth of twigs of willow, apparently caused by a species of gall.

August 12th.—The President in the Chair.

Mr. Edwards, the large Saturniids, *Antheræa paphia*, *Automeris illustris*, *Citheronia magnifica*, *Samia angulifera*, *S. promethea*, the Sphingids *Oxyambulyx*

substrigilis, *Psilogramma menephron*, and *Erebomorpha fulgurita*. Mr. Newman, the pink form of *Neuria reticulata* from the coast of Co. Cork, and two forms of the pupa of *Selenia lunaria*, the chocolate-coloured hibernating one, and the bright green 2nd brood one. Mr. A. E. Gibbs, a large Psychid larva which fed on "sea grape" (*Coccoloba uvifera*) and sweet lemon (*Citrus* sp.). Mr. Curwen, fine series of *Apatura iris*, *A. ilia*, with abs. *clytie*, *iliades*, and *pallescens*, etc., from Samoussy, near Laon. Mr. C. B. Williams, living larvæ of *Saturnia pyri* from Syria, and reported finding a mite, *Eriophyes*, in the willow galls exhibited at the last meeting. Mr. Main, a living pupa of *S. pyri* from Lugano, and eggs of *Ascalaphus* from S. France. Dr. Chapman, the cases of a Psychid, *Oreopsyche pyrenaella* from Gavarnie, Pyrenees, and gave notes on the life-history of the species. The ♂ moults twice at pupation, the ♀ only once.

August 27th. - Mr. A. E. GIBBS, Vice-President, in the Chair.

Mr. T. W. Hall, aberrations of *Polyommatus icarus* from Hertford and Folkestone, including radiated underside, dwarf, brilliant blue ♀, bleached ♂, etc., specimens. Dr. Chapman, imagines and parasites of *Oreopsyche pyrenaella* with examples of the larval skins moulted at pupation. Mr. Main, insects found in baskets of cane sugar from Java, including *Coleoptera*, *Blutidæ*, a cricket, etc. Mr. Neave, blue ♀ aberrations of *Polyommatus icarus* from Otford, 1st brood, and Chipstead, 2nd brood. Mr. Edwards, examples of the genera of *Rhopalocera*, *Delias*, *Metaporia*, and *Dismorphia*.

A discussion took place as to the habit of some species of *Lepidoptera* to return again and again to the same spot, *Mania maura*, *Gonepteryx rhamni*, *Amphipyra pyramidea*, etc., being instanced.—HY. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, June 3rd, 1914.—The Hon. N. C. ROTHSCHILD, M.A., F.L.S., F.Z.S., Vice-President, in the Chair.

Mr. Reginald Temperley, l'Aurore, Vevey-la-Tour, Switzerland, was elected a Fellow of the Society.

Mr. E. E. Green exhibited a living specimen of *Raphidia xanthostigma*, taken at light in a house at Camberley, on June 1st; also an example of *Conops vesicularis*, L., caught amongst heather at Camberley on April 29th. Mr. E. A. Butler, living specimens of *Berytus clavipes*, Fab., with eggs on leaves of *Ononis*; also on behalf of Mr. W. West, of Lewisham, a ♂ of *Pygolampis bidentata*, Goeze, swept in New Forest, May 22nd, the second recorded British specimen of this insect. Mr. S. A. Neave, some African *Tabanidæ* bred by him on his recent visit to Nyasaland on behalf of the Imperial Bureau of Entomology, and also the larvæ of most of these species. Mr. Sich, mines of the larva of *Nepticula acetosæ*, Stt., in a leaf of *Rumex acetosa*, L., from Richmond, Surrey. Mr. J. H. Durrant, an Ichneumon which he had captured in a mill in Bermondsey on the 5th of December, 1913, and which had been identified by Mr. Claude Morley as *Nemeritis canescens*, Gravenh., and which had not been recorded as

British. Mr. C. F. M. Swynnerton read notes on the families reared from the eggs laid by known females of *Papilio dardanus*, Brown, at Chirinda, S. E. Rhodesia. Prof. Poulton read some observations by Mr. W. A. Lamborn on the retention of spaces for the "tails" in the pupæ of the tailless females of *Papilio dardanus*. He also exhibited all the female offspring, together with 2 of the males, of a family containing nine *hippocoon* and eight *dionysus* bred from a *hippocoon* female of *Papilio dardanus* in S. Nigeria by W. A. Lamborn. Also a male and female *Hypolimnas wahlbergi*, taken *in coitû*, on December 28th, 1913, by Mr. E. E. Platt, of 403, Essenwood Road, Durban, together with a portion of the family reared from the eggs laid by the female. Also bred imagines and pupal cases of *Amauris ochlea*, *A. echeria*, and *A. albimaculata*, and blown larvæ of the first and last named sent by Mr. E. E. Platt, and 36 *Mylabris fasciata* taken on September 24th and 26th, 1913, at Moor Plantation, near Ibadan, by Mr. W. A. Lamborn. The series was sharply divided into a light section containing 28 individuals and a dark section containing 8.

The following paper was read:—"Notes on the Life-History of *Papilio demolion*," by Margaret E. Fountaine, F.E.S.—GEO. WHEELER, *Hon. Secretary*.

COLEOPTERA IN THE ABERDEEN DISTRICT.

BY MAJOR A. O. C. WATSON, R.A.M.C.

The following list includes the most interesting *Coleoptera* selected from a total of 413 species observed by me within a radius of twelve miles from Aberdeen, between 1910 and 1914.

Cychrus rostratus, L., rare and occasional; one under a stone at Lairston Loch, 8.7.11. *Carabus nemoralis*, Müll., common and general from early spring to autumn; *C. violaceus*, L., very rare, one specimen in stump of Scots fir, Hazelhead, 1.4.11; *C. nitens*, L., occasional, one found by Wm. Cowie of Inverurie, on Scotston Moor, in August 1898, and another found in a Black-headed Gull, Craibstone, 21.4.12. *Nebria gyllenhali*, Sch., Glen Muick (Ballater), 19.7.13. *Notiophilus aquaticus*, L., rare, and easily passed over as *N. biguttatus*, in flood refuse, Dee and Don, and occasionally in other localities. *Leistus rufescens*, F., not common, but widely distributed. *Clivina collaris*, Hbst., rare and occasional, Craibstone, 29.7.11. *Brosicus cephalotes*, L., occasional, one specimen, Murcar, 28.6.10. *Harpalus tardus*, Panz., not common, found on Balgownie links, June, 1913. *Stomis pumicatus*, Panz., rare and occasional, Old Mill, 1.4.11. *Pterostichus diligens*, Sturm, very common, and numerous near water. *Amara convexiuscula*, Marsh., rare, Balgownie, 10.6.13; *A. fulva*, De G., not common; *A. apricaria*, Sturm, fairly common; *A. acuminata*, Payk., not common, Balgownie, 19.12.11. *A. ovata*, F., not common, Craibstone, 4.10.12. *A. communis*, Panz., fairly common and general; *A. tibialis*, Payk., one specimen, Murcar, 28.9.11; *A. lucida*, F., not common. *Calathus flavipes*, Fourc., not very common, but general; *C. mollis*, Marsh., not very common, but fairly general; *C. micro-*

pterus, Dufts., not common. *Anchomenus piceus*, L., rare, one specimen, Murcar, 23.7.10; *A. gracilis*, Gyll., common and general. *Bembidium tibiale*, Dufts., rare, Dee flood refuse, 2.4.13; *B. decorum*, Panz., rare, Dee flood refuse, 25.11.12; *B. bruxellense*, Wesm., fairly common; *B. bipunctatum*, L., rare, Dee flood refuse, 25.1.12; *B. punctulatum*, Drap., rare, Dee flood refuse, 29.1.14; *B. prasinum*, Dufts., not common in this area. *Patrobis excavatus*, Payk., fairly commonly at all seasons. *Dromius agilis*, F., not common; *D. quadrimaculatus*, L., fairly common, but not abundant; *D. quadrinotatus*, Panz., rare; *D. nigriventris*, Thoms., fairly common on golf links.

Cælabus noremilineatus, Steph., rare, Lairston Loch, 30.3.11.; *C. parallelogrammus*, Ahr. (?), rare, Lairston Loch, 12.3.14. *Deronectes duodecim-pustulatus*, F., fairly common and general in the Dee. *Hydroporus lepidus*, Ol., not uncommon and very local, Cultis Quarry; *H. rivalis*, Gyll., not common and nowhere abundant, though general; *H. septentrionalis*, Gyll., Lairston Loch, 12.3.14; *H. tristis*, Payk., fairly common and general; *H. memnonius*, Nic., common; *H. nigrita*, Fab., abundant, and generally distributed. *Agabus biguttatus*, Ol., rare, Walker's Dam, 5.7.13; *A. paludosus*, F., common and general; *A. femoralis*, Payk., rare, Lairston Loch, 11.3.14; *A. congener*, Payk., fairly common; *A. nebulosus*, Forst., abundant but local; *A. sturmi*, Gyll., fairly common and general; *A. arcticus*, Payk., not common, Lairston Loch, 12.3.14. *Platambus maculatus*, L., fairly common and general, darker than as described by Fowler. *Ilybius fuliginosus*, F., fairly common and general, sometimes very numerous; *Dytiscus marginalis*, L., rare and very local, Rubislaw Quarry. *Acilius sulcatus*, L., local, only found in summer. *Hydrobius fuscipes*, L., common and general; var. *æneus*, Sol., very rare, Lairston, 15.2.11. *Helophorus rugosus*, Ol., locally common on sea-side links. *Hydræna gracilis*, Germ., not common.

Aleochara mærens, Gyll., not uncommon; *A. obscurella*, Er., rare, Balgownie, 23.3.12. *Oxyptoda spectabilis*, Maerk., not uncommon; *O. lividipennis*, Mann., not common; *O. umbrata*, Grav., not common. *Ocalea castanea*, Er., fairly common. *Homalota hygrotopora*, Kr., fairly common; *H. graminicola*, Grav., common and general; *H. linearis*, Grav., very common and general; *H. depressa*, Gyll., especially on fungi, but not common; *H. euryptera*, Steph., not common. *Autalia impressa*, Ol., common in fungi in late summer. *Bolitochara obliqua*, Er., rare, Aboyne, 21.9.13; *B. lucida*, Grav., on fungi in autumn; *B. lunulata*, Payk., fairly common on fungi. *Leptusa analis*, Gyll., not common. *Tachyporus hypnorum*, F., var. *meridionalis*, Fairm., not common; *T. humerosus*, Er., not common; *Tachinus collaris*, Grav., fairly common; *T. elongatus*, Gyll., very rare, Glen Muick, 19.9.13. *Megacronus analis*, F., rare, Cultis, 20.7.11. *Bolitobius lunulatus*, L., rare, Hazelhead, 31.10.13. *Mycetoporus clavicornis*, Mannh., not common; *M. splendens*, Marsh., rare, on a dead cormorant at Balgownie, 11.2.13. *Quedius mesomelinus*, Marsh., fairly common; *Q. nigriceps*, Kr., fairly common and general in district; *Q. fumatus*, Steph., fairly common; *Q. umbrinus*, Er., common and general; *Q. fulvicollis*, Steph., rare; Lairston, 11.3.4. *Leistotrophus nebulosus*, F., in horse-dung, Murcar, 28.6.18. found also at Springhill, 29.3.13. *Staphylinus erythropterus*, L., rare, in dung, Murcar, 15.7.10.

Ocypus olens, Müll., rare, a few local examples have been shown me by other collectors; *O. brunnipes*, F., rare, Balgownie, 5.3.13; also in a gull shot at Blackburn, 13.3.12; *O. morio*, Grav., fairly common and general. *Philonthus varians*, Payk., Murcar, 22.7.10; *P. puella*, Nordm., rare, Durris, 9.7.10. *Lathrobium clongatum*, L., not very common; *L. fulvipenne*, Grav., fairly abundant. *L. terminatum*, Grav., rare, curling pond, Cultis, 15.2.13. *Stilicicus geniculatus* Er., not common. *Stenus canaliculatus*, Gyll., not common; *S. bifoveolatus*, Gyll., not very common; *S. latifrons*, Er., common and general; *S. paganus*, Er., fairly common. *Bledius arenarius*, Payk., rare, Dee flood refuse, 19.1.12. *Platystethus arenarius*, Fourc., not common. *Anthophagus testaceus*, Grav., rare, Durris, 9.7.10. *Lesteva longelytrata*, Goeze, fairly common and general; *L. sicula*, Er., not common. *Deliphrium tectum*, Payk., rare, Balgownie, 13.2.14. Culter, 4.10.13. *Philorhinum sordidum*, Steph., rare, Auchlunies, 24.3.11; *Homalium rugulipenne*, Rye, locally abundant on sea-shore links; *H. pusillum*, Grav., abundant under bark of dead Scots fir; *H. monilicorne*, Grav., fairly common under bark; *H. vile*, Er., fairly common on broom flowers in summer, and under bark in winter. *Anthobium torquatum*, Marsh., abundant on broom blossom. *Proteinus brachypterus*, F., very common and general. *Phlaeobium clypeatum*, Müll., not common. *Megarthus depressus*, Steph., rare, Hazelhead, 17.11.12.

Agathidium marginatum, Sturm, rare, Dee flood refuse, 27.1.14. *Anisotoma dubia*, Kug., rare, Murcar, close to dung, 30.8.11. *Necrophorus ruspator*, Er., not common. *Silpha nigrita*, Creutz., said to occur in the district; *S. opaca*, L., not common. *Choleva angustata*, F., fairly common; *C. fusca*, Panz., not uncommon; *C. tristis*, Panz., very common on carcasses. *Colan brunneum*, Latr., not common, under bark and on fungi. *Micropeplus staphylinoides*, Marsh., rare, Balgownie links, 13.10.11. *Epuræa æstiva*, L. not common. *Nitidula bipustulata*, L., rare and occasional, Murcar, 25.9.14. *Soronia grisea*, L., rare, in burrow of *Cryptorrhynchus* in willows at Newton, Dee, 3.3.14. *Ips quadripustulata*, L., fairly common, especially on dead poplars. *Rhizophagus depressus*, F., common and general on various trees; *R. ferrugineus*, Payk., not common, but generally under bark of dead Scots pines. *Lathridius lardarius*, De G., not common, and never abundant. *Corticaria crenulata*, Gyll., common and general in haystacks; *C. umbilicata*, Beck, not common, Balgownie, 21.2.12, and 9.5.12. *Cryptophagus saginatus*, Sturm, fairly common. *Parnus auriculatus*, Panz., fairly common.

Aphodius fessor, L., rare in this district; in horse-dung, Lairston, 20/6/13; *A. lapponum*, Gyll., fairly common and general; *A. inquinatus*, F., not common, but general; *A. contaminatus*, Hbst., very common and general, sometimes every patch of horse-dung on a road swarms with them, and they fly up in clouds; *A. depressus*, Kug., not very common. *Serica brunnea*, McLeay, very local, and only found near the sea-shore. *Cryptohypnus dermestoides*, Hbst., not common, Dee flood refuse, 23.3.12. *Dolopius marginatus*, L., not common, in a thrush shot at Craibstone, 31.5.13. *Corymbites cupreus*, F., not very common; var. *æruginosus*, F., rare, Balgownie, 16.10.11. *Telephorus nigricans*, F., var. *discoideus*, Steph., fairly common in summer on broom. *T. paludosus*,

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THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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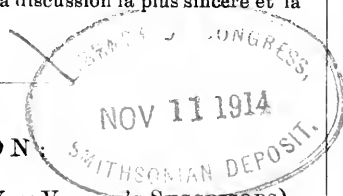
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NOTE.—Subscriptions for 1914 (6s. per annum, post free) are long overdue, and should be paid to R. W. LLOYD, I. 5, Albany, Piccadilly, London, W.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesdays, November 4th and 18th, Dec. 2nd, 1914. January 20th (ANNUAL MEETING), Feb. 3rd 1915.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY. Meetings at Hall 20, Salisbury House, Finsbury Circus, E.C., on First and Third Tuesdays of the month at 7 p.m. Visitors invited.

November 3rd—"The Middle Ages in the Wey Valley," E. CHAPMAN.
November 17th—"Chrysanthemums," J. RICHES. December 1st—"Gynandromorphism," Dr. E. A. COCKAYNE.

Hon. Sec.: J. ROSS, 18, Queen's Grove Road, Chingford, N.E.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green, at 8 p.m., on the last Monday in each month.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the second Friday in each month.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—
Meetings: the Third Monday in each Month, October to April. *Hon. Sec.* WM. MANSBRIDGE, 4, Norwich Road, Wavertree, Liverpool.

Fall., rare, under bark; Mugiemoss, 26.6.13. *Rhagonycha limbata*, Thoms., common on broom blossom; *R. pallida*, F., not very common. *Malthodes marginatus*, Latr., not common, Culter Bridge, 28.6.13. *Niptus hololeucus*, Fald., not common, in the Natural History Museum at Aberdeen. *Ernobius mollis*, L., the larvæ are very abundant in old palings, but the perfect insect is not very common.

Rhagium indagator, Gyll., rare, between Culter and Coutlaw, 11.3.11; *R. bifasciatum*, F., abundant when found, viz., in old palings and stumps of Scots firs. *Acanthocinus ædilis*, L., not common, I have seen one taken at Skene, 25.6.10. *Donacia sericea*, L., not common, and never abundant. *Hydrothassa aucta*, F., rare, Balgownie, 29.2.12. *Prasocuris phellandrii*, L., not common, Loch Skene, and thrice in flood refuse. *Galerucella sagittariæ*, Gyll., not common and local, Lochs Skene and Drum. *Longitarsus anchusæ*, Payk., fairly common and general; *L. melanocephalus*, All., only found at Aboyne, 21.9.12; *L. suturellus*, Duft., fairly common; *L. jacobææ*, Wat., fairly common; *L. gracilis*, Kuts., not common, Banchory, Denewick, 28.6.13. *Psylliodes chalconera*, Illig., not very common. *Salpingus castaneus*, Panz., rare, under bark of Scots pine, Tyrebagger Hill, 1.12.13. *Rhinosismus ruficollis*, L., not so common as *R. planirostris*. *Anaspis rufilabris*, Gyll., not common, on broom blossom, in flood refuse, and under bark. *Meloë proscarabæus*, L., rare, one live specimen shown me in May, 1912.

Apion gyllenhali, Kirby, not common, on *Lotus corniculatus*, Murcar, 20.7.10. *Otiorrhynchus atroapterus*, De G., common on sea-shore links; *O. blandus*, Gyll., very common on sea-shore links; *O. muscorum*, Bris., fairly common and general. *Strophosomus limbatus*, F., found in a rook shot at Nairn. *Sciaphilus muricatus*, F., rare, Heathcot Ferry, 4.3.14. *Tropiphorus tomentosus*, Marsh., fairly common and general. *Phyllobius maculicornis*, Germ., not common but general. *Philopodon geminatus*, F., not common, sea-shore links. *Barynotus schönherri*, Zett., common and general. *Alophus triguttatus*, F., not common, Dee flood refuse 7.11.12; I have seen another from Persley Den, 17.5.13. *Sitones griseus*, F., not common, sea-shore links; *S. tibialis*, Hbst., very common and general; *S. flavescens*, Marsh., rare, Murcar, 13.9.11; *S. puncticollis*, Steph., very common and general; *S. sulcifrons*, Thunb., rare, Muchalls, 6.9.11. *Hypera polygoni*, L., fairly common and general. *Liosoma ovatum*, Clairv., var. *collaris*, Rye, not very rare, Old Mill, 8.4.11; Brig o' Dee, 27.9.11. *Curculio abietis*, L., I have found the larvæ abundantly at Maryculter, but only got the beetle once. *Pissodes notatus*, F., larvæ common, but the beetle is seldom found; *P. pini*, L., larvæ common, as in the case of *P. notatus*. *Grypidius equiseti*, F., rare, Balgownie Links, 12.6.13. *Anoplus plantaris*, Naez., rare, in a town garden, 6.7.10. *Miarus campanulæ*, L., reared from galls on *Campanula rotundifolia* by Prof. Traill, in August, 1883. *Orobitis cyaneus*, L., rare, reared by Prof. J. Traill from *Viola canina*, in October, 1912. *Cryptorrhynchus lapathi*, L., rare and very local, on purple willows, Newton Dee and nowhere else. *Ceuthorrhynchus alliaris*, Bris., rare, Raeden, 14.5.12. *Rhinoncus gramineus*, F., not common, Murcar, 27.9.11; Dee flood refuse, 31.10.13. *Hylastes ater*, Payk., not common, or at least seldom found, especially on roots of dead Scots pines; *H. cunicularius*, Br., very rare,

one specimen at Hazelhead, 13.11.13; *H. palliatus*, Gyll., not common, Skene, 11.11.13; Aboyne, 21.9.12. *Hylastinus obscurus*, Marsh., fairly common and general, in dead and dying broom; the larvæ and perfect insect may be found together. *Myelophilus piniperda*, L., only too abundant in pines. *Phleophthorus rhododactylus*, Marsh., very common and general on dead broom, often along with *Hylastinus*.

13, Cardew Place, Aberdeen :

March 28th, 1913.

GABRIUS PRIMIGENIUS, Joy, A NEW BRITISH BEETLE.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

When spending a day with Dr. Sharp in the New Forest in April, 1913, he showed me a very distinct new species of beetle, *Actobius ytenensis*, recently taken by him, and very kindly accompanied me to the spot where he had found it, but we failed to catch further specimens. On returning home I found that I had an example of it among my series of *A. signaticornis*, Rey, labelled "Bradfield, 1910." At the end of September, I visited the only ground in this district which at all resembles the habitat of *A. ytenensis* in the New Forest. It is a very limited area of sphagnum, which is at present, on account of the very fine weather we have had lately, only slightly damp. There were very few beetles in the sphagnum, but I eventually obtained six specimens of the species for which I was looking, and somewhat to my surprise a *Gabrius*, which, however, proved to be a female. A few days afterwards Mr. Tomlin accompanied me to the spot, and although for fully twenty minutes we caught nothing, we eventually took a few more of the *Actobius*, and three more of the *Gabrius*. On dissecting a ♂ specimen of the latter I was very pleased to find it was *G. primigenius*, Joy, the only other ♂ being *G. pennatus*, Sharp. Since then I have collected a large quantity of the sphagnum in sacks, and sifted it carefully at home, but have only succeeded in taking two more examples of *Gabrius*, one being a ♀, the other a ♂ *primigenius*. In describing *G. primigenius* (Ent. Mo. Mag., vol. XLIX, p. 25) from a single specimen from N.W. Spain, I stated that the legs are dark. On re-examination of the type, kindly lent to me by Mr. Champion, I find this description only applies to the hinder pair, the others not being well seen. I am quite unable to see any external distinctions between this species and *G. pennatus*, so

that the females are quite indistinguishable. Capt. Deville* has informed me that he has taken *G. primigenius* in flood refuse at Gredmont, Haute-Marne, and reports it from the Isle of Sylt, Northern Germany.

Bradfield :

October 11th, 1914.

NOTES ON SOME BRITISH SPECIES OF *HALTICA*.

BY D. SHARP. M.A., F.R.S.

For some time past I have given a good deal of much interrupted attention to this difficult genus, and recently I have had the advantage of comparing notes and specimens with Mr. H. Britten, who has given much study to it. I therefore venture to publish the following notes, which I hope will at any rate help to clear up certain points. I may add that I have in hand a study of the larvæ and natural history of the species occurring here, and that I should much like to receive living specimens of the beetles or their larvæ from other quarters.

The remarks given below relate only to the three species that occur on *Erica* and *Calluna* in the United Kingdom.

HALTICA ERICETI, All.

H. scutellaris Sharp, M.S.

Allard's first discrimination was in the form of a diagnosis, Bull. Soc. Ent. France, 1859, p. clxvi, as follows: "Grapt. ericeti, mihi. Metallico-virescens, nitida. Gr. ampelophaga affinis, sed major et convexior omnibus aliis Graptod. Elytra humeris rotundata, convexiore et fortiter punctulata, punctis inordinatis magisque remotis, praecipue distinguitur.—Long. 5 mill.; larg. $3\frac{1}{2}$ mill.—Landes, sur l' *Erica tetralix*."

In his monograph of "*Galerucites anisopodes*," Ann. Soc. Ent. France, 1860, p. 82, the description is still comparative, and adds but little to his previous diagnosis: he tells us, however, that it occurs at Brest.

I am not sure what Allard's "*ampelophaga*" may be. It is said by him to be very common on vines in the south of France. As only

* I was glad to receive a post-card a few days ago from Capt. Deville, in which he writes: "A hearty salutation from an accessory war-theatre, where we are not very strongly fighting." I am sure that British Coleopterists hope that he will get through the war safely.

other localities he adds: "M. Waterhouse me l'a envoyée d' Angleterre, et notre collègue M. Lethierry l'a rapportée de Médéah, en Algérie." Weise, *Ins. Deutschl.* 6, p. 837, only records the species as occurring on vines in Southern Europe, Algeria and Syria, and adds: "das Vorkommen in England (Allard) ist unwahrscheinlich." The occurrence of "*ampelophaga*" in England was, however, corroborated by the later authority, Kutschera, as recorded by Rye, *Entom. Annual*, 1869, p. 54, who in a parenthesis adds that *ampelophaga* "must be *coryli* from its constant habitat, or else *coryli* and *ampelophaga* cannot be specifically distinct." According to Weise, *op. cit.* p. 833, *coryli* is *quercetorum* Foudr. var., and *ampelophaga* Allard, is the vine species. Its occurrence in England is very doubtful.

These remarks might be much amplified if other authorities were considered, but they are sufficient to show the confusion that has existed. Weise, moreover, appears to have known but little of Allard's *ericeti*; he considers it to be a form unknown in Germany, and only doubtfully distinct from *ampelophaga*, the vine species.

It is thus very difficult to identify the *ericeti* of Allard with certainty. But it appears highly probable that the *ampelophaga* of Waterhouse is *coryli* of our collections, and that *ericeti* of Allard is a very closely allied species attached to *Erica* instead of to hazel. This view agrees with Fowler, *Brit. Col.*, 4, p. 355, and with Edwards, *Ent. Mo. Mag.*, 27, p. 291.

The two authorities last mentioned identify *ericeti* with a northern *Haltica*, the male of which is remarkable on account of the greatly developed basal joint of the front tarsus. I formerly adopted this view, but after a correspondence with Mr. Britten I found that he entertained a different opinion, and this induced me to reconsider the whole matter, and as a result of this I feel but little doubt that he is correct and that the *ericeti* of Allard is an insect I had distinguished in my collection, and to which I had attached the MS. name *scutellaris*, under the impression that it was an undescribed form. This species is a large *Haltica*, 5 mm. long, convex, of a beautiful blue-green or green colour; with the scutellum never concolorous with the elytra and usually of a brilliant golden, or pale metallic, colour. The elytra have very marked punctuation.

The species occurs but rarely here. I have a series that I have accumulated in the New Forest during ten years of special search for it; Mr. Champion has a series from Surrey, and Mr. Britten has also a few specimens. It is here attached I believe to *Erica tetralix*. All

the specimens I have seen are females, and this though I have made many attempts to discover the male. As the chief locality of the species is close to my residence, I have often endeavoured to discover its special habits, but at present in vain.

I have now before me two living specimens, captured here on August 11th, and preserved in a flower-pot with *Erica tetralix* and *Calluna vulgaris* growing, under cover of a glass cylinder capped with wire gauze.

I believe the species is a very shy one, and is usually concealed in the moss at the base of the clumps of the *Erica*, but I have once or twice beaten it from *Ulex* bushes, round the base of which *Erica* was growing. The glass cylinders just mentioned I find keep *Coleoptera* and their larvæ alive better than any other method I have tried. The two living individuals are females, and though they have flourished quite healthily—to all appearance at any rate—there are no signs of eggs or larvæ.

The species occurs here as a companion of the extremely abundant *H. ytenensis* (to be subsequently described) and in consequence of the fact that I could only find females of it, I for long tried to persuade myself that it is a dimorphic form of *ytenensis*; but I am pretty sure that this is not the case, as the female genital characters are of themselves sufficient for the separation of the two.

HALTICA BRITTENI, *sp. n.*

Haltica ericeti Fowler, Edwards, nec Allard.

♂ *Graptodera longicollis* Rye, Ent. Mo. Mag., 12, p. 179.

♀ *Graptodera ericeti* Rye, *ex parte*.

If I have (following Mr. Britten) correctly determined the *ericeti* of Allard, we are much assisted in comprehending the allied form for which I propose the name of *britteni*, in honour of Mr. H. Britten, of the Oxford University Museum.

The female of this species is partly the *ericeti* of our earlier collections, and the ♂ at any rate is our old *H. longicollis*.

It is here that we are puzzled on account of our not knowing the male of the true *ericeti*. Hence the very few females of true *ericeti* that were extant were mixed with the species now under consideration. Consequently the localities recorded for *ericeti* are not trustworthy, as they apply to two species.

Judging from my own collection, it appears probable that in the United Kingdom, *britteni* is a northern, *ericeti* a southern, insect.

In the Continental literature there is only one species recorded as attached to *Erica*, and this I have already identified as the true *ericeti*.* *H. britteni* is remarkable on account of the greatly dilated basal joint of the front tarsus; while on the continent of Europe no species is recorded as possessing this feature to so great an extent. It appears, therefore, to be clear that *H. britteni* is a new species.

The sexes exhibit much difference, and there is also considerable variation among individuals of the same sex: a brief diagnosis follows:

Metallico-viridescens, interdum subaurata vel subænea, prothorace nitido, elytris sat fortiter punctatis.

Mas, elytris nitidis; articulo basali tarsorum anticorum et intermediorum valde dilatato. Long., 3½ mm.

Fem., elytris subnitidis. Long. 4¼—4½ mm.

The species exhibits variation in the punctuation of the elytra of the male, which in one individual is very much coarser than in the others, and this specimen has the upper surface very polished and shining, almost as much so as *H. coryli*.

The female appears to be less variable as regards punctuation, but in colour it is even more variable being sometimes dull black.

The male may be easily discriminated from our other British species by the basal joint of the front tarsus being about three times as broad as the following one. The ædeagus is remarkably large, broad, and becoming distinctly broader behind; there is a well-marked acumen on the tip of the hind margin.

The female is much like *ericeti* ♀, but is always a little smaller, it has a shorter thorax, less punctuation of the elytra, and shorter and broader front tarsi; the coloration is less brilliant, and the scutellum never so striking in golden appearance.

H. britteni appears to be no rarity in Scotland where it occurs even north of the Grampians (Nethy Bridge). On the great heaths in Dumfries and Kircudbrightshire it is certainly not uncommon, and could probably be found in plenty by special search. I have observed it living on *Erica* about New Galloway, and on that occasion there were a great many specimens on one plant (June, 1867), but I do not

* *Longicollis* Allard, was said by him to occur on "bruyères," and Weise says that *longicollis* All., is typical "*olevaca*" It cannot, however, be our "*olevaca*" (= *utensis* of this paper), and in all probability Allard mixed more than one species under the name of *longicollis*.

recollect which species of *Erica* it was. In England Britten has met with it in Cumberland, and it occurs in Wales (Holyhead, T. V. Wollaston). It is said to have been found by Wilkinson at Scarborough on *Helianthemum* (Rye, Ent. Annual, 1869, p. 55) but I have some doubts as to the correctness of this observation.

HALTICA YTENENSIS, nom. n. (= *oleracea*, Brit. coll.) *nec* L.

Few beetles have been more discussed in this country than the species we call *oleracea* Linn.

Practically there has been from the beginning no *oleracea*, Linn. It has always been a "Magazine." Linnæus' description consists of three words ("*saltatoria virescenti-cerulea*."). His types consist, according to G. R. Waterhouse, of two specimens representing two species, neither of which is now included in what is called "*oleracea* L.," and his immediate successors confused under the name various other species of the genus (cf. Rye, Ent. Ann., 1869, p. 55). At present it is doubtful to us here what Continental authors mean by *oleracea*, but as they certainly do not mean either of the two species represented in the Linnean collections, and as there is no reliable traditional meaning for the name, we really should do better not to respect it.

I do not know whether we have in England the species called *oleracea* by Weise, and according to my view it does not matter, for nomenclatorial purposes, whether we have it or not. Allard's "*oleracea*" was probably more than one species, and a specimen from him in Mr. Britten's possession appears to be a species not yet found in England. According to Weise "*oleracea*" has no synonym available as a name for our species, and I therefore think it will help us if I start a new one.

H. YTENENSIS Sharp. *Viridi vel cæruleo-metallica, prothorace brevi, parum punctato, elytris antèrius sat fortiter punctatis, apicem versus obsolete punctatis. Long. 3¼—4 mm.*

Mas, tarsi anterioribus articulo basali parum dilatato; ædægo ad apicem fere rotundato, margine medio tantum obsolete angulato, acumine fere nullo.

H. ytenensis is perhaps the most numerous in individuals of all the species of *Coleoptera* found in the New Forest. It inhabits both species of *Erica* as well as *Calluna vulgaris*, and it probably eats other plants. I have in hand some observations on its habits and will do no more at present than mention that it lives in the imago state for a very long time, and is only a few weeks in the larval state, and that there is probably only one generation annually. Early in August I ascertained its presence here on the heaths in enormous numbers, and yesterday

it was even more abundant, for on turning back the stems of a patch of *Erica tetralix* upwards of fifty specimens were observed in a space of about half a square foot, and it appeared to be spread over the moor. Many of the specimens were only recently disclosed. Mr. Lyle tells me that in some years the larvæ may be swept up in tens of thousands from the heather of the moors, but that this year it was rarer than on many other years. His identification of the larva was quite correct as I reared some of those he gave me.

Brockenhurst:

October 16th, 1914.

NOTES ON THE AUSTRALIAN XYLOPHILIDÆ DESCRIBED BY
BLACKBURN, WITH A DESCRIPTION OF A REMARKABLE NEW
SPECIES FROM QUEENSLAND.

BY G. C. CHAMPION, F.Z.S.

The types of the various Australian species described by Blackburn in 1891 under his genera *Syzeton*, *Syzetoninus*, and *Syzetonellus* have been recently acquired by the British Museum. They cannot be separated from *Xylophilus*, some of them indeed being closely related to American members of the last-named genus.* The tarsal and abdominal structures noticed by Blackburn are exactly those of *Xylophilus*, and the characters he relied upon to distinguish his three supposed new genera *inter se*, mainly taken from the relative size of the eyes and the form of the antennæ, are of no value for generic definition, as shown by the European *X. (Euglenes) oculatus*, Payk., and *pygmæus*, deGeer, in which the eyes differ greatly in size in the two sexes; the antennæ, too, in the males of these insects being very differently formed from those of the females. Blackburn's paper was overlooked by me in 1895 when I described four species of *Xylophilus* from Australia, but this does not affect the validity of the last-named insects. The following very interesting minute form from Queensland is now added:—

XYLOPHILUS MALLEIFER, n. sp.

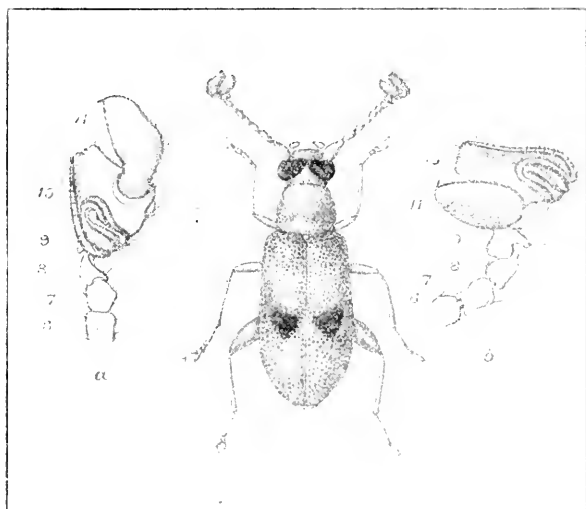
♂. Oblong, narrow, shining, rufo-testaceous, the eyes black, the elytra each with an obliquely placed triangular piceous patch on the disc beyond the middle; upper surface closely punctate, the punctures on the head and prothorax minute, those on the elytra coarser; sparsely, very finely pubescent. Head together with the eyes fully as wide as the base of the prothorax; eyes large, coarsely faceted, contiguous above. Antennæ long, stout, joint 1 much stouter than those following, 2 short, transverse, 3—7 decreasing in length, 3 much longer than 4, 8 and 9 twisted, subtriangular, 10 and 11 together dilated into

* cf. Biol. Centr.-Am., Coleopt. IV, 2, pls. 8 and 21, on which 35 species are figured.

an extremely broad, concave, hammer-shaped club, the inner face of 10 convolute, 11 with a hook-like spine at the apex. Prothorax transverse, narrowed anteriorly, transversely depressed on the disc before the base. Elytra much wider than the prothorax, subparallel in their basal half, obliquely depressed on the disc below the base. Legs slender; posterior femora much thickened, simple; posterior tarsi with joint 1 much longer than the others united. Length, $1\frac{1}{2}$ mm.

Hab.: QUEENSLAND, Cairns.

Described from a single example, captured by Dr. R. C. L. Perkins during his visit to Australia a few years ago. The ♂ antennal structure is quite unlike anything known to me amongst the Xylophilids, and it is suggestive of that occurring amongst the American Malachiids of the genus *Collops*; but in this latter case the malformation is restricted to the second joint, whereas in the Heteromerous insect now described it is transferred to the ninth and tenth joints which together



appear to form a sensitive clasping organ. The accompanying excellent figures, drawn by Mr. Horace Knight, illustrate this peculiar structure better than any description: (a) a portion of the left antenna with the tenth and eleventh joints pushed forward, and the eleventh raised; (b) a portion of the right antenna with the apical joints in their normal resting position, the eleventh thus appearing to be placed before the tenth. The above correction in the synonymy affects the names of four species: *lateralis*, Blackb., *fasciatus*, Boh., *crassicornis*, Pic, and *humeralis*, Lea, all of which are pre-occupied.

Horsell, Woking:

October 20th, 1914.

OBSERVATIONS ON THE LIFE-HISTORY OF *METHOCA ICHNEU-MONOIDES*, LATR.

BY H. G. AND R. J. CHAMPION.

During the past summer we have given a good deal of time to observing the habits of this Mutillid, as we had heard that it was suspected of being parasitic on larvæ of species of *Cicindela*, and thought it would be of interest to discover as much as we could of its life history. Not until most of the data had been collected did we find out that the work had already been carried out by two Swedish investigators, Adlerz and Bouwman, whose results, as far as we know them, agree closely with ours [cf. Trans. Ent. Soc. Lond., 1911, p. 452]. Unfortunately, their papers are written in Swedish, whilst the reference quoted does little more than mention the facts. However, confirmatory evidence is not without its value, and as we have reason to believe that several Hymenopterists have patiently watched the wingless ♀ of *Methoca* for hours together without observing anything of interest, we feel justified in writing this note. Of course, our experiments are by no means completed, but as in all probability neither of us will be in a position to carry them through, at least as far as breeding out the imagines, we describe them now as far as they have gone.

The ♂ of the insect in question is rare, in fact we have not yet seen it alive, but we were always able, on a favourable day, throughout August to secure one or more ♀ ♀ running hurriedly about amongst the heather on the sandy parts of the commons near here. When alarmed, as they readily are, they "freeze," and are then only too easily passed over. The great variation in size, length from 4 to 9 mm. is remarkable.*

Directly we began to watch them in the field, we saw that when they were not running about apparently aimlessly, they were busily engaged in filling in the burrows of large *Cicindela* larvæ with the shrivelled corollas and little twigs of *Calluna*, as well as with grains of sand, small fibrous masses of humus, etc. From the fact that these burrows were partly in the favourite haunts of *C. campestris* and partly in those of *C. sylvatica*, we have every reason to believe that these two species are attacked indifferently, as was observed by the Swedish workers. Excavations of burrows so filled revealed a paralysed larva.

* In Saunders' *Hymenoptera Aculeata* the limits 6-9 mm. are given for the ♀.

We next wanted to see how the *Methoca* rendered the formidable beetle-larva *hors de combat*. The pugnacity of the latter is of course well known, and, as we had opportunity of seeing, it will fight to a finish with any intruder of its own kind. No form of animal food comes amiss, and even the large larvæ of *Balaninus nucum* are rapidly disposed of. An excellent account of the life history of *Cicindela campestris* may be read in Proc. Ent. Soc. Lond., 1903, p. xv, written by F. Enock, and we need only mention that the full grown larva may be found in vertical cylindrical burrows $2\frac{1}{2}$ to 7 ins. deep in sandy soil, the entrance being characterised by the absence of any pile of excavated material (contrast those of *Cerceris* and other *Hymenoptera*). The large shovel-shaped cephalothoracic shield with the peculiarly set mandibles form a neat floor and a deadly trap for any hapless victim to fall on to, or run over, the larva being enabled to stay in any position in the burrow by a double hooked projection from the 5th dorsal segment. When disturbed it does not retreat to the bottom, but usually remains an inch or two from the top, thus facilitating the work of digging it out.

The question at once presents itself: how does the *Methoca* get below this head-shield to attack the *Cicindela* larva in its vulnerable parts?; and although we have seen it do so on several occasions, we still only know that it does dodge round somehow or other, and from that moment onward it is all over with the larva. In only one case have we seen the parasite experience real difficulty in accomplishing its purpose, and that was probably an accident; she apparently slipped down into the hole when the larva was a little below the top, and was caught by a leg in the mandibles of the latter and thrown some two or three inches away.

The *Cicindela* larvæ readily make fresh burrows in captivity, or will even adopt and adapt artificial ones to their requirements, and after a few experiments, we tried to get them to burrow in sand in glass vessels, in such a way that one wall was formed by the glass through which events might be observed: an ordinary tumbler was found to be much the best for the purpose.

We were thus able to see that the *Methoca* stings its victim several times in the thorax (presumably the thoracic ganglia) paralysing it almost completely, and then deposits a single egg on it. She then proceeds to fill up the burrow with any movable material at hand, even attempting to use *Calluna* twigs many times her own size, which as often as not she is unable to get into the hole. Extra-

ordinary care is taken with the finishing touches designed to render the hole indistinguishable from the surrounding ground, this being effected so well that even after watching the whole process, it is impossible after once taking one's eyes off the spot, to indicate exactly the original centre of the hole. In one case 17 dead *Calluna* corollas, 39 *Calluna* twigs, one broken-off *Erica* flower, and 180 odd pieces of dirt, sand, &c., varying in size from four to six times her own, to minute grains, were used for the purpose, apart from the sand kicked down deliberately some 20 times, only larger material being handled at first, then the small sand grains, &c., and finally twenty minutes were occupied in rendering the site invisible.

Even where *Cicindela* larvæ are abundant, it must be tedious work finding the burrows, but once found, no time is wasted, and in captivity one *Methoca* will dispose of as many as three in one day. It will be seen from the experimental data that the parasite usually remains about half-an-hour down the burrow after tackling its occupant, perhaps resting, and then spends thirty minutes to an hour filling up the hole. This done, she at once starts off on the quest of a further victim, and so long as the weather is bright and warm, is unceasingly active. The night and dull weather is usually spent in an empty hole or any dark hollow; we were unable to observe that any food was taken, our specimens remaining alive up to eight days in captivity without eating.

The observations made on the behaviour of 6 ♀ ♀ will now be summarised:—

1. ♀ of medium size, found on August 19th, and imprisoned over a large *Cicindela* (probably *C. sylvatica*) burrow on the open heath-land, under a glass bottomed pill-box; she went down at once, re-appearing after half-an-hour (the pill-box having been removed), and spent two hours and a half filling in the hole. She then ran off to look for a fresh hole, but was caught and brought home and put in a glass jar half filled with sand. She spent the night in an empty burrow in the sand, and the next morning proceeded to fill up the hole! In the afternoon, a larva was put in a prepared hole in the same jar, and the *Methoca* at once went in after it, a struggle ensuing near the top, during which the victim ejected a good deal of fluid from the mouth. During the fight, the burrow had become blocked up, and this seems to have disgusted her, for she deserted it without finishing the work.

On the 21st, on being brought near an occupied burrow, she soon went down, and a few seconds after the larva rushed right out of it, followed by the *Methoca*; it soon went back but was seen no more, as its enemy followed it, evidently disposed of it in the usual way and then filled up the hole, spending half-an-hour at the work. The next day we confined her over a burrow in a

narrow glass tube in which the larva could be seen; she was seen to slip below without any trouble and to sting the thoracic segments; the hole was not properly filled up, probably owing to the artificial conditions. On the 24th, we tried her with a large active larva, but she seemed weak, and although this did not prevent her exploring the burrow, her remains were found at the bottom of it a day or two later!

2. A large ♀ caught on Aug. 19th. On being put in a glass vessel containing two tenanted burrows, she only required a couple of minutes to find one of them, whose occupant was near the top. The *Methoca* at once "froze," and five minutes later made a rush and slipped in below it; both disappeared down the hole, and after about an hour the *Methoca* emerged and set to work filling the burrow. The night was spent in an empty hole. On the 23rd, with a new burrow, occurred the episode mentioned where the *Methoca* was thrown off, but within half-a-hour, she had accounted for the larva, although she was too weak to fill the hole, and died the next day.

3. This ♀ was found on the evening of Aug. 19th, in a burrow with an obviously indisposed *Cicindela* larva, as we were getting some larvæ to experiment with. On the 20th, she appeared to fall down a *Cicindela*-burrow, and a fight ensued during which she inflicted several ineffective stings; the two had another fight in the evening, but again without result. On the 21st, she had disposed of a fresh larva by 10.30 a.m., and by 4.30 of a second, and after that of a third, though the filling of the hole was only completed the next morning, when she was lost.

4. This, a fairly large specimen, was put in a jar with three *Cicindela* larvæ, two small and one full-grown, in their burrows; she chose (as in all other similar cases) the big one, and disabled her victim as usual, but the burrow got blocked below the completely paralyzed larva near the top, and after two hours fruitless toil, she only succeeded in getting it half-an-inch down; this did not satisfy her, and she deserted the work. The *Methoca* died on the 24th.

5. On August 24th the *Methoca* went down a burrow at the side of a tumbler half full of sand, in spite of the fact that it was blocked by a partly consumed *Balaninus* larva. The *Cicindela* larva was disposed of as usual but the hole not filled. On the next day another larva (No. 1) was parasitised at 11 a.m. and the work of filling up the hole took till 2.45 p.m. A third oviposition was effected between 3 and 5 p.m. On the 29th yet two more (Nos. 2 and 3) victims were made, both in burrows such that operations could be observed through the glass walls.

Further observations were able to be made in the cases of Nos. 1, 2 and 3 indicated above. On September 2nd, i.e., only four days after oviposition, the young parasitic larva was visible—it lives entirely externally—attached to the ventral surface of one of the thoracic segments of its host-larva. Apparently the juices are sucked out of the host which slowly shrivels up as the parasite grows; the former seems to remain alive almost to the end. The *Methoca* larva is of a peculiar glistening, transparent white colour, tapering off at both

extremities ; the segmentation is clearly marked by constrictions, but no legs are visible. Twenty days from oviposition the larva of No. 1 spun a cocoon of white (subsequently yellowish) silk quite free from dirt particles some three-quarters of an inch long—the Swedish observers speak of an “earth cocoon.” In the case of No. 2 a rather smaller cocoon was spun 18 days, and in that of No. 3, 28 days after oviposition. In No. 3 only the uppermost inch of the burrow had been filled up and the parasite and its host had been near the bottom, three inches lower down ; on becoming full-fed, the former, in spite of its legless condition, climbed up to the top of the free portion of the burrow to spin its cocoon.

6. The parent ♀ parasite in this case we are not sure of : on digging out some burrows on August 29th for more experimental larvæ, a *Methoca* larva was found feeding on a paralyzed *Cicindela* larva ; it is noteworthy that this burrow had not been filled up, but it is probable that the ♀ concerned was one caught quite near on August 14th, and thus prevented from completing its work in which case 17 days elapsed before the cocoon was spun on Sept. 1st.

Horsell, Woking :

October 9th, 1914.

HOMONOTUS (POMPILUS) SANGUINOLENTUS, F., IN SURREY,

BY H. G. AND R. J. CHAMPION :

WITH NOTES ON THE CHARACTERS OF THE ♂ AND THE
DISTRIBUTION AND NOMENCLATURE OF THE GENUS,

BY THE REV. F. D. MORICE, M.A.

During the past summer, we took in this district two Fossores which we were quite unable to match with any insect described in Saunders's *Hymenoptera Aculeata* of the British Isles. One of them, a ♀, was very characteristically coloured, black with red pronotum and propodeum, whilst both were remarkable for the elongate form of the thorax, largely brought about by the shape of the pronotum.

We suspected the two of being the sexes of a single species, and the Rev. F. D. Morice kindly examined them for us. He at once recognised the ♀ as *Homonotus sanguinolentus*, F., and the ♂ as almost certainly of the same species, and on his advice we sent the ♂ to the British Museum, where Mr. R. Turner compared it with the collections there and confirmed it as belonging to this species.

This interesting and beautiful Fossor has hitherto only once been recorded from Britain [Ent. Mo. Mag., 1900, p. 206], by

E. Saunders, under the name *Pompilus* (*Wesmaelinus*) *sanguinolentus*, F., a ♀ having been taken in the New Forest by Dr. Sharp on July 18th of that year. Our ♀ specimen was caught on a *Calluna* plant at Chobham, on August 11th, and the ♂ was swept up on a piece of heathy ground near Woking, on June 21st. Subsequent search has failed to give us any further specimens.

Mr. Morice sends us the Notes here appended:—

(1). CHARACTERS OF *HOMONOTUS SANGUINOLENTUS*, F. ♂.

Narrow and elongate. Size probably varies. This specimen about as large as normal ♂ ♂ of *P. unicolor*, *nigerrimus*, etc. Length, $7\frac{1}{2}$ mm.

Dead-black, practically entirely, except the *white* calcaria. The dull coriaceous surface is clothed with a dense but exceedingly short pubescence of microscopical griseous hairs, sheeny in certain aspects; apart from this pubescence it seems to be quite hairless.

The head, viewed from in front, is nearly round. The frons very tumid and slightly shining; the eyes reaching to the base of the mandibles (*genæ nullæ*!) and with more or less concave inner margins; the clypeus very large and prominent, overlapping and hiding mandibles, mouth-parts, etc.; its apex slightly emarginate. The antennæ are stouter than in the ♀, their apical joint slightly longer than the others; the basal (scape) short and barrel-shaped, joints 3—12 differing little in shape or length; all more or less convex beneath. Viewed from above the head appears remarkably *crescent-shaped*, the tempora being produced backwards and brought, as it were, to a sharp point (at any rate to an acute angle) at some distance behind each eye, making the occipital margin as a whole arcuately (or even in some aspects angularly) concave. The occipital truncation is very abrupt (though without any raised margin), and the occiput itself much excavated, overlapping and hiding the narrower extreme apex of the thorax.

The thorax is widest in the middle (viz., across the insertions of the wings). Its width here is about equal to that of the head. The very long pronotum is trapeziform, widening evenly from its apex to its base. The mesonotum proper is transverse, much shorter than the pronotum. The scutellum is elongate and subtriangular, with a narrow, and sharply excised ("bifid" or "bidenticulate") apex. The propodeum is of a singular form, each of its sides being compressed and produced posteriorly into a sort of tooth. Viewed laterally, the whole upper outline of the thorax forms one gentle and uninterrupted curve from end to end. The abdomen is flat, or even a little hollowed beneath, strongly convex above. The unguiculi are bifid, i.e., each ends in two branches of unequal length, these branches being sub-parallel to each other, and closely adjacent. (This character can only be seen properly when the claws are viewed laterally, and magnified with a moderately high power of the compound microscope, e.g., $\times \frac{1}{2}$ -inch).

The alary character mentioned by Saunders in his description of the ♀ [Ent. Mo. Mag., 1906, p. 152] (viz., an *upright* cross-nervure in the posterior wing) appears in the ♂ also, and is thought to be of real generic value, occurring in no other group of the family.

The insect seems to have a wide distribution (from Scandinavia to Italy), but to be everywhere a great rarity. I once took a ♀ at Innsbruck, but never, I believe, a ♂, though I have something very like it, but not in my opinion identical with it, from Lambèse in Algeria. It is utterly unlike any other North-European form in both sexes!

(2). NOMENCLATURE OF THE GENUS *Homonotus*, DHB.

The proper generic name for this species seems to be *Homonotus*, which was suggested for it in 1843 by Dahlbom [*Hym. Eur.*, I, p. 35], in the event of its proving generically distinct—as it certainly is—from *Salius* F., with which he provisionally placed it. Previously he had proposed for it another name, viz., *Isonotus*, but this he withdrew on finding that the name was pre-occupied in *Coleoptera*.

In spite of his suggestion to adopt the name *Homonotus*, Dahlbom (l.c.) described the insect as a *Salius*; and in 1845, when he revised his former work, he not only left *sanguinolentus* in *Salius*, but committed the crime of re-introducing the name *Homonotus* in a totally different sense, so that *Homonotus* Dhb., 1845, is a “homonym” of *Homonotus*, Dhb., 1843!

The name *Salius*, F., was invalid from the first, having been used already in a different sense before Fabricius appropriated it for his own genus. Also, as said above, *sanguinolentus* is not a *Salius* in the Fabrician sense. So the name *Salius* is altogether “out of court,” though the species is so called by most recent authors, e.g., Thomson, Taschenberg, etc.

Fabricius himself described it originally as a *Sphex* (that name being then used to cover practically all Fossorial *Hymenoptera*). Afterwards he placed it in his new genus, *Pompilus*, and it is cited under that name by E. Saunders [Ent. Mo. Mag., 1906, p. 152].

But it is now generally admitted that the name *Pompilus*, F., is “invalid,” as is *Salius*, and for the same reason, viz.: “pre-occupation in another zoological group.”

The name *Wesmaelinius*, Costa (given by Saunders in brackets), was proposed far later than *Homonotus* (viz., in 1887), and must therefore yield precedence to it.

The catalogue of Dr. v. Dalla Torre unfortunately ignores Dahlbom's publication of the name *Homonotus* in 1843. But attention has been called to it by Stein first, and again by F. F. Kohl; and the name *Homonotus*, Dhb., is restored in its original sense for the present species by the most recent writer on the subject, Dr. O. Susterka (Wien, 1912).

Working :

October 13th, 1914.

EUTHRIPS TAMICOLA, A NEW SPECIES OF *THYSANOPTERA*
FROM THE FLOWERS OF THE BLACK BRYONY.

BY RICHARD S. BAGNALL, F.L.S., F.E.S.

One afternoon towards the end of June I found an ordinary looking black Thrips, with a white band at the base of wings, in some numbers, in the minute flowers of the Black Bryony (*Tamus communis*) in the hedge-side near Yarnton, Oxon. I did not attach much importance to this capture, but upon examination on my return home it turned out to be a new and distinct species of *Euthrips* (*Anaphothrips*), which I describe below. The following evening I cycled along several country roads and lanes in the neighbourhood of Oxford (in the two counties) and took the same Thrips in the flowers wherever the plant was found.

EUTHRIPS TAMICOLA, n. sp.

This species belongs to the section in which the sixth antennal joint is not divided.

♀. Length, 1.4 to 1.5 mm.

Colour, deep blackish brown, all tibiae and tarsi yellow. Second antennal joint yellowish distally, 3 and 4 yellowish and 5 greyish-brown with the base yellow. Upper wings grey-brown, basal fifth (or thereabouts) white; mid-vein of hind-wings and all cilia fumose.

Head broader than long, 0.7 as long as broad, diverging basally; surface irregularly and transversely striate, sparingly setose. Eyes somewhat prominent, occupying about 0.5 the total length of the head, coarsely faceted and minutely and sparingly pilose. Ocelli on a prominence, large with reddish tinge; posterior pair about on a line through middle of eyes. Antennæ about 2.2 times the length of the head, 6th joint entire; relative lengths of joints approximately :—5 : 12 : 20 (including stem) : 17 : 13 : 18 : 3 : 5. Joint 3 pedi-

cellate, roughly fusiform; 4 moderately clavate, 5 and 6 somewhat broadly united: 3 and 4 with long, slender double trichomes, and 6 with a long, slender, single trichome near outer side of apex.

Prothorax transverse, angles rounded, about 0.6 as long as broad; surface irregularly transversely striate, minutely and sparingly setose; about 0.9 the length of the head.

Pterothorax a little longer than broad, sides of metathorax narrowing towards the base of the abdomen. Legs moderately long, tibiæ somewhat more than usually stout. Wings fully developed, reaching to the eighth abdominal segment; setæ minute, lower vein of fore-wing more or less regularly set, 17 or more to distal fifth; upper vein with four or five near base, 1 near middle, 1 about distal fourth, and 1 at extreme apex; costa similarly set with similar weak setæ. Lower cilia of fore-wing wavy, those of hind-wing rather sparse.

Abdomen elongate-oval, slightly broader than the pterothorax and about 0.6 the length of the entire insect, rapidly narrowing from base of segment 8 to tip; spines on 9 longer than, and on 10 as long as, the 10th segment, which is open above.

Type: In Hope Department of Zoology, University Museum, Oxford.

Habitat: In numbers with its pink larvæ, in the flowers of the Black Bryony (*Tamus communis*), Yarnton and Cowley (Oxon), and North Hincsey, Boar's Hill and neighbourhood (Berks), June, 1914. Probably a widely-distributed species.

Hylton, near Sunderland:

October 5th, 1914.

THE FOOD-PLANT OF *PLATYPTILIA MIANTODACTYLA*.

BY THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S.

In a previous number of this Journal (Ent. Mo. Mag., Ser. II, Vol. XXIV, pp. 159-160, 1913) I stated that the probable food-plant of the larva of *Platyptilia miantodactyla* was *Achillea ochroleuca*. This supposition I now have proved to be correct, as both Mr. K. Predota and myself have reared this moth from larvæ found feeding on the above-mentioned plant.

Arundel House,

Kensington Palace Gardens, W.:

October 8th, 1914.

Euperitelus, Ch.: synonymical note.—This Curculionid genus, type *E. albovarius*, Ch., from "Durango, Mexico," described by myself in the Supplement to the Central American Otiorrhynchidæ [Biol. Centr.-Am., Coleopt. iv, 3, p. 341, pl. 15, figs. 30, 30a (1911)] is synonymous with *Peribrotus*, Gerst. [Arch. f. Nat. XXXVII, p. 72 (1871)], type *P. pustulosus*, Gerst., from Mombasa, and the name *Euperitelus* must be suppressed. *E. albovarius*, moreover, is so like *P. pustulosus* that it probably belongs to the same species. The type of *E. albovarius* was given me by my friend Signor A. Solari of Genoa. It bears a printed locality ticket, "Sierra de Durango, Messico, Höhe," and therefore was assumed by me to be a Mexican insect; but as the specimen in question had been purchased from a dealer there is little doubt that some mistake had been made in labelling. I am indebted to Mr. G. A. K. Marshall for calling my attention to the subject.—G. C. CHAMPION, Horsell, Woking: October 9th, 1914.

Abundance of Pyrameis cardui at Bridlington.—In the middle of last month (September) I noticed *Pyrameis cardui* in great plenty at Bridlington—as abundant, indeed, as I have ever seen it anywhere at any time. They were flying freely in the gardens in the town on the front opposite the sea, and in the small garden of the house at which I was staying numbers of them could usually be seen whenever the sun was shining—very often several at a time on a flower-head of Michaelmas daisy a few inches in circumference. They formed a striking feature, too, on the flower beds in the public gardens close to the sea. A couple of nights of rather keen frost in the third week in September, however, seemed to send many of them into hibernation, as the species was not so numerous afterwards, though the frost did not appear to diminish the numbers of *Pyrameis atalanta* and *Vanessa urticae*, both of which were in good force, though not so plentiful as *cardui*. The main strength of the immigration of *cardui* in Yorkshire—probably in the spring—was apparently at that part of the coast, as at Scarborough, rather over twenty miles away, I found it much less numerous, and at Whitby, considerably further north again, but where I only spent one day, I failed to find it at all. As is so often the case when *cardui* is abundant *Plusia gamma* was in swarms, but it is difficult to believe that their occurrence together can ever be anything more than a coincidence. *P. cardui* has occurred here at Huddersfield as well as in other inland districts of our county this season, so it may be that the immigration has spread widely over the country.—GEO. T. PORRITT, Huddersfield: October 3rd, 1914.

Vanessa antiopa in Norfolk.—Mr. C. G. Barrett (son of the late Mr. C. G. Barrett, a former editor of this journal), has asked me to record that his daughter took a very fair specimen of *Vanessa antiopa* as it was settled upon some wood at Gaywood, near King's Lynn, on September 15th last.—GEO. T. PORRITT.

A probable third brood of Pieris brassicae.—The two common white butterflies *Pieris brassicae* and *P. rapæ*, have been more than usually plentiful here this year, especially in the larva state, as is only too evident by the "skeletonized"

condition of the cabbages in the gardens. A good many specimens of *P. brassicae* in quite fresh condition have been observed on the wing at the end of September and well into the second week of the present month,* the usual summer brood having disappeared long before. This would seem to indicate a partial third brood of the butterfly, as was the case in the autumn of 1898 (cf. Ent. Mo. Mag., Vol. XXXIV, p. 278, and XXXV, p. 12).—JAMES J. WALKER, Oxford: October 17th, 1914.

Recent Literature.—In the present critical state of affairs on the continent, which is certain to interrupt the publication of the scientific periodicals of every country, it may not be out of place to note that the June and July numbers of the "Annales de la Société Entomologique de Belgique" contained papers by the following authors: F. J. Ball—"Le Dimorphisme saisonnier des androconia chez certaines Rhopalocères" (illustrated by 2 plates); E. Bergroth—"Two undescribed Pentatomidæ from New Caledonia," and "Three new Heteroptera from Ceylon"; E. Buboïs et R. Vitalis de Salvaza—"Contribution à la faune entomologique de l'Indochine française" (containing the first instalment of a systematic catalogue of *Lepidoptera Rhopalocera* of the family *Papilionidæ*); and F. Ohaus—XIII Beitrag zur Kenntnis der Ruteliden. In the June number (p. 169) M. Guilleaume enumerates various *Curculionidæ* rare or new to the Belgian fauna, some of which are well known British forms. The additions are *Bagous nigratarsis*, Thoms., *Orchestes pratensis*, Germ., *Gymnetron villosulum*, Gyll., *collinum*, Gyll., and *pilosum*, Gyll., *Ceuthorrhynchidius terminatus*, Herbst, *Ceuthorrhynchus nanus*, Gyll., and *Rhinoncus albicinctus*, Gyll. One species in this Belgian list, *Magdalis violacea*, L., certainly ought to occur in Britain, as it is very widely spread on the continent wherever pines are to be found.

The Australian Zoologist. Vol. I, part I, Sydney. July 13th, 1914.—The first part of this new periodical, issued by the Royal Society of New South Wales, and edited by Allan R. McCulloch, Zoologist, Australian Museum, contains two papers directly or indirectly connected with entomology:

(1) The *Mallophaga* as a possible clue to bird phylogeny, by Lancelot Harrison; (2) A Monograph of the genus *Tisiphone*, Hübner, by G. A. Waterhouse. The author of the second paper recognizes two species of this genus of butterflies, *T. abeona*, Donovan, with five subspecies, which are illustrated on a good uncoloured plate, and *T. helena*, Olliff.

Review.

"SUPPLEMENT TO DR. SHARP'S COLEOPTERA OF SCOTLAND," by ANDERSON FERGUSON. Reprinted from the "Scottish Naturalist," July, 1913—June, 1914.

For a long time past, Scotland has been a specially favoured resort of Entomologists; and since the completion in 1882 of Dr. Sharp's series of valuable and interesting papers in the "Scottish Naturalist" on the *Coleoptera* of that

* On October 23rd I saw a small ♂ specimen, apparently in good condition, flying vigorously in a gleam of sunshine.

country, almost every year has been marked by the visit of one or more of the leading students and collectors of that Order to its classic localities. Their published experiences, as well as those of resident Coleopterists, have resulted in a very large addition to our knowledge of Scottish beetles, as well as to the number of species known to occur in that country; and a glance at the voluminous "Bibliography" at the end of these collected papers, comprising all available records from 1871 to 1912, will at once indicate the amount of information at the disposal of the compiler. He has made excellent use of this material in the new "Supplement," which is practically on the lines of Dr. Sharp's list of Scottish *Coleoptera*, now brought well up to date. Besides the incorporation of a large number of species new to the country, many that were previously included in the list on more or less slender or doubtful evidence have been confirmed by these later records. A considerable proportion of these additions have been hitherto regarded as markedly southern in their distribution, and it is somewhat surprising to find such insects as *Eidessus minutissimus* and *Hæmonia appendiculata* established as Scottish species; still more startling are the records by Nilis in 1878 from Shetland—rightly bracketed by the compiler as "requiring additional confirmation"—of *Anchomenus sexpunctatus*, *Bembidium callosum*, *Dromius fenestratus*, *Onthophagus taurus*, *Corymbites lipustulatus*, and *Spondylis buprestoides*! We congratulate Mr. Fergusson on this useful and well-executed piece of work, which is indispensable to every student of our British beetle fauna.

Obituaries.

Dr. John Henry Wood, whose death took place at Ledbury on August 29th, 1914, belonged to a family remarkable for energy and longevity, and devoted to the medical and military professions. His father was a physician in Ledbury, and reached the age of 91. Dr. Wood was the eldest son (born April 14th, 1841). The second (Miles A. Wood, F.R.C.S.) succeeded his father in practice in Ledbury. The third brother is Major-General Sir Elliott Wood, who was all through the Boer war as Chief Royal Engineer with Lord Roberts. The youngest brother, Colonel C. K. Wood, was Chief Royal Engineer with General Buller throughout the war, including the relief of Ladysmith.

Dr. Wood became M.R.C.S. in 1862, taking the M.B. Lond. in 1864, and for nearly half a century was in practice at Tarrington, Herefordshire. He was never married. He was of untiring activity, whether after hounds, at tennis, on a bicycle (in pre-motor days), or far afield on foot amongst the Black Mountains or by the Monnow. He was a good botanist, and was accomplished in other studies, so that he was an excellent comrade—not only from his genial nature, but by the stores of knowledge always at his command. Lithe and wiry, without a particle of superfluous tissue, alert in expression and action, he had as much the appearance of a highly-trained officer as of a physician.

Dr. Wood was no doubt an enthusiastic and successful collector, but his real interest in Entomology was much more a scientific one. Life-histories and

biological details always engaged his attention, and he was familiar with these in regard to many species, his published papers dealing only with those that were previously more or less unknown, and his stores of knowledge were always at the service of other workers, as may be gathered also from the works of Barrett, Tutt, and many others.

He became so familiar with all the *Micro-Lepidoptera* of Herefordshire, that some twenty odd years ago, finding, as one may say, no more worlds to conquer in that direction, he began to study *Diptera*, in the same thorough manner. He confined himself to the fauna of Herefordshire, and was very loath indeed to go outside the county—whether for Entomological or other reasons. His collections, containing almost exclusively Herefordshire specimens, have been bequeathed to the Woolhope Club for the Hereford Museum.

We have in the pages of our Magazine a good record of the salient points of Dr. Wood's work as an Entomologist. There are altogether some 45 papers, beginning in 1878 and continuing to the present year. These communications are not mere records of some simple interesting captures, but are for the most part life histories, or careful analyses of certain groups. The first twenty-three papers are life histories of Tortrices or Tineæ (and two Pyrales), not only with the care we find in some of Buckler's papers, but almost always with details of habits as observed in the field. Each year contained one or more papers up to 1895 relating to *Micro-Lepidoptera*; about this time the *Diptera* became the subject of his observations, but we find a paper on *Lithocolletis concomitella* and its allies in 1900, and one on Wingless Geometers in 1913. In 1903 there begins a succession of papers on *Diptera*.

Amongst his papers on *Lepidoptera* he announced several new species (with their life histories), *Nepticula torninalis*, *Tinagma betulæ*, *Micropteryx sangii*. The discovery of *Ditula woodiana* (described by Barrett in Ent. Mo. Mag., 1882) and of its larva feeding on mistletoe (Ent. Mo. Mag., Vol. XXVIII, p. 225) was most notable. His differentiation of several new species amongst the rush-feeding *Coleophoræ* in the same volume (XXVIII) resulted from a research involving much minute observation. He also added to the British list several *Nepticulæ* found by him in England for the first time. His studies of the larvæ of *Micropteryx*, and his elaborate study of the mines, habits, and history of *Nepticulæ* must be mentioned.

His papers on *Diptera* added a number of new species, and of species new to Britain, and the monograph on the genus *Phora* places our knowledge of the species of that difficult genus in quite a satisfactory position, a number of new species being described.

There are several papers in the Transactions of the Woolhope Club: in 1876, one on the Clearwings of the Woolhope district; in 1891, the *Nepticulæ* of the Woolhope district; in 1904, on the Herefordshire *Platypezidæ*, *Pipunculidæ* and *Syrphidæ*, and no small share in the list of Herefordshire *Lepidoptera*, by Mr. Thomas Hutchinson, corrected up to 1902, from a first list in 1866.

We find one paper in the Entomologists' Record "On the plumose antennæ of male Lepidopterous pupæ" (Vol. iv, p. 237, 1893).

Appended are references to his papers in the Ent. Mo. Mag.:—

The descriptive papers on larvæ and their habits are to be found Vol. XV, pp. 108, 149; XVI, p. 164; XVII, pp. 158, 177; XIX, p. 140; XX, pp. 165, 245; XXI, p. 253; XXII, pp. 151, 261; XXIII, p. 188; XXIV, pp. 126, 160, 250; XXV, pp. 66, 125, 217; XXVI, pp. 1, 88, 102, 133, 148, 209, 261; XXVII, pp. 100, 271, 272; XXVIII, pp. 117, 169, 225, 282; XXIX, pp. 197, 268; XXX, pp. 1, 43, 93, 150, 272; XXXI, p. 155; XXXVI, pp. 30, 69, 102.

The papers on *Diptera* are in Vols. XXXIX, p. 271; XLI, p. 5. (On *Phora*, Vol. XLII, pp. 186, 262; XLIII, p. 228; XLIV, pp. 164, 215, 253; XLV, pp. 24, 59, 113, 144, 191, 240; XLVI, pp. 149, 195, 243; XLVIII, pp. 94, 166; L., p. 152); XLVI, p. 45; XLVII, pp. 40, 49; XLIX, pp. 13, 84, 268.

The papers on Wingless Geometers are in Vol. XLIX.—T. A. C.

We regret to announce the death of *Mr. William Warren, M.A., F.E.S.*, which occurred at Tring on October 18th, after a short but painful illness. A more extended notice will be given in our next Number.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
Thursday, Sept. 10th, 1914.—Mr. B. H. SMITH, B.Sc., President, in the Chair

Mr. Ashdown exhibited *Lepidoptera* taken by him in June and July at Lugano and Zermatt, including *Eneis æollo*, *Anthocharis simplonia*, *Aricia eumedon*, *Albulina pheretes*, *Syntomis phegea*, etc. Mr. H. Main, larvæ of an *Ascalaphus* just hatched sitting with open jaws for prey. Mr. Turner, *Agriades thetis*, ♂, with very dark underside and a ♂ *Polyommatus icarus* with much intensified submarginal dark spots on the underside. Mr. Edwards, exotic butterflies from S. America. Mr. B. S. Williams, a black suffused *Mamestra brassicæ*, and one with pale ground and aberrant stigmata. Mr. Curwen, species of *Anthrocera* taken by him recently, and suggested a future discussion on the genus.

Thursday, September 24th, 1914. The President in the Chair.

Exhibition of lantern slides by Messrs. B. S. Williams and Dennis. Mr. Newman, bred series of *Pieris napi* from Cork and Sligo, with yellow suffused and black suffused aberrations, one of the latter having a complete transverse black band on the fore-wings. Mr. Brooks, varied series of *Polyommatus icarus* females from Horsley, Headley, and Pickett's Hole, near Dorking. Reports were made on the occurrence of *C. edusa*, *P. atalanta*, *P. cardui*, &c. Only stray specimens had been seen of *C. edusa*, while the other two species were common.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, October 7th, 1914.*—
Mr. G. T. BETHUNE-BAKER, F.L.S., F.Z.S., in the Chair.

Dr. Leslie C. Coleman, D.Sc., Dept. of Agriculture, Bangalore, Mysore, India, and the Rev. Frederic S. F. Jennings, Warmsworth Rectory, Doncaster, were elected Fellows of the Society.

Mr. O. E. Janson exhibited an abnormal specimen of *Melitæa aurinia*, taken in Kent, in which six of the nervures were almost symmetrically deficient on either side. Mr. G. T. Porritt, a series of *Chloroperla venosa*, Steph., taken by Prof. Carr and Mr. Mottram on the river Trent, near Nottingham; also a series of *C. grammatica*, Poda, for comparison. The Rev. F. D. Morice, a specimen of *Crabro* (*Lindenius*) *albilabris*, F., ♀, with abnormal ocelli; also a photograph, from nature, of eggs *in situ*, laid in a rose-stem in a *double row* by Vallisneri's "*Mosca dei Rosai*," *Arge pagana*, exactly as in the author's original figure. The Rev. G. Wheeler, a gynandromorphous specimen of *Plebeius argyrognomon* taken by him in the Val Maggia on July 13th this year, exactly halved, the right wings being ♀, the left ♂. Also an extreme example of *ab. persica* of *Polyommatus icarus* taken on the marshes at Altmatt, on July 11th, and a ♂ of *Pararge mæra* with symmetrical deeply concave costa of both fore-wings, taken on the Via Mala on July 17th; also a well-marked series of *Pieris manni* from Vernayaz, taken on July 5th this year. Mr. Prideaux, a very perfect example of *Rumicia phlæas*, *ab. schmidtii*; also a ♂ *Polyommatus icarus*, *ab. obsoleta*, and some very blue ♀ ♀ of the latter species, all taken in the neighbourhood of Brasted, N. Kent. Mr. Donisthorpe, specimens of *Platyphora lubbocki*, Verrall, and *Enigmatias blattoides*, Meinert, which he had reared in a nest of *Formica picea*, Nyl., taken in the New Forest in July last. He pointed out that he believed he had proved that these two flies were the ♂ and ♀ of the same species. Mr. L. W. Newman (1) A curious gynandromorphic *Polyommatus icarus*, the right fore-wing being ♀ and the remaining three wings ♂ except for one orange lunule on each of the hind-wings. (2) A curious Zygænid of doubtful species, being small and having four spots only, and hairy body. (3) A short series of *Epicnaptera ilicifolia*, bred from the wild ♀ taken May, 1913, at Cannock Chase by Mr. Oliver. (4) A pair of beautiful *Neuria saponariæ* from the Cork coast, the ground-colour being a rich pink instead of the usual yellowish colour. The following papers were read:—"Contributions to the Life-history of *Polyommatus eros*," by T. A. Chapman, M.D., F.Z.S., F.E.S.; "Parthenogenesis in Worker-bees at the Cape," by R. W. Jack, F.E.S.; "Description of New Species of *Catantacta*," by W. F. H. Rosenberg, F.E.S.; "Revision of the Species of the Genus *Odynerus* (*Hymenoptera*) occurring in the Æthiopian Region," by G. Meade-Waldo, M.A., F.E.S.; "Some remarks on the Coccid Genus *Leucaspis*, with descriptions of two new species," by E. Ernest Green, F.E.S.—GEO WHEELER, *Hon. Sec.*

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THE ENTOMOLOGIST'S MONTHLY MAGAZINE.

EDITED BY

G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.E.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

SECOND SERIES—VOL. XXV.

[VOL. L.]

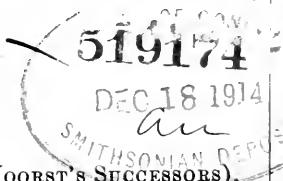
“J’engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesdays, Dec. 2nd, 1914. January 20th (ANNUAL MEETING), Feb. 3rd 1915.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

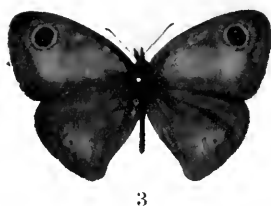
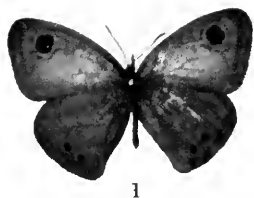
Dec. 1st—"Gynandromorphism," Dr. E. A. COCKAYNE. Dec. 15th—Annual General Meeting. Jan. 5th, 1915—Presidential Address, Mr. L. B. PROUT, F.E.S.

Hon. Sec. : J. ROSS, 18, Queen's Grove Road, Chingford, N.E.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green, at 8 p.m., on the last Monday in each month. Room open at 7.30. Dec. 28th—"The Smaller British Butterflies—Hairstreaks, Blues, and Skippers," Mr. R. W. ROBBINS.

Chingford Branch. The Chingford Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the second Friday in each month.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. — Meetings: the Third Monday in each Month, October to April. *Hon. Sec.* WM. MANSEBRIDGE, 4, Norwich Road, Wavertree, Liverpool.



Engravers Guild, Ltd.

PSEUDONYMPHA CASSIUS, 1♂, 2♀, 6 under side.
P. DETECTA, 3♂, 4♀, 5 under side.
P. VIGILANS, 7♂, 8♀.

DESCRIPTION OF A NEW SPECIES OF *PSEUDONYMPHA*
(*SATYRINAE*) FROM SOUTH AFRICA.

BY ROLAND TRIMEN, M.A., F.R.S.

PSEUDONYMPHA DETECTA, *sp. nov.* (Plate XII, ff. 3-6).

Closely allied to, and intermediate between, *P. cassius* (Godt.), and *P. vigilans*, Trim., but nearer to the former.

Exp. al. (♂) $1''3\frac{1}{2}-6'''$; (♀) $1''3\frac{1}{2}-5'''$

♂. Greyish-brown; fore-wing with a large disco-cellular and discal deep-fulvous patch; hind-wing with a small discal patch of the same deep-fulvous, not far from hind-margin, between 1st and 3rd median nervules. *Fore-wing*: a well-defined moderate-sized, sub-apical, ovate, black, bluish-bipupillate ocellus in a distinct pale-yellowish, outwardly fuscous-edged ring; fulvous patch occupying discoidal cell from near base, and extending beyond it, superiorly to lower edge of ocellus, and inferiorly below median nervure and its first nervule, but bounded externally by a sub-marginal rather indistinct transverse dark-brown line, commencing on costa beyond ocellus; this patch is in three examples somewhat indistinctly crossed—in one example obscurely *divided*—by a shorter dark brown line just beyond extremity of discoidal cell. *Hind-wing*: small discal fulvous patch bounded externally by a rather faint sub-marginal dark-brown line, and in three examples marked on its outer edge between 2nd and 3rd median nervules with a minute unipupillate ocellus.

UNDER-SIDE. Costa and apical area of fore-wing and entire hind-wing pale brownish-grey, more or less closely hatched and flecked generally with short, irregular, thin, brown striolæ and dots. *Fore-wing*: fulvous patch extending to base itself. *Hind-wing*: two transverse angulated brown streaks, one before the other about middle, usually rather indistinct, and in two examples not traceable; usually two minute unipupillate ocelli—the additional one between 1st and 2nd median nervules; and also a third situated sub-apically between sub-costal nervures.

♀. Like ♂. *Hind-wing*: on under-side, in one of the two examples, the minute ocelli between 2nd and 3rd median nervules are wanting; and in both the median transverse streak is only faintly discernible.

Differs from *P. cassius* on the *upper-side* of fore-wing in the much larger fulvous space, which begins much nearer base and rises higher in discoidal cell; and of hind-wing in possessing a small fulvous discal patch on median nervules, while the conspicuous two sub-marginal ocelli near anal angle in *cassius* are either wanting altogether or only the upper one of them is very minutely represented. On the *under-side* in the *fore-wing* the fulvous space is not so much more developed than in *cassius* as it is on upper-side; while in the hind-wing the three small ocelli are very minute or obsolescent; and the ground-colour of both wings is much greyer and paler, and its striolation and two transverse

angulated streaks are much fainter and without the strong rufous tinge so pronounced in *cassius*.

This form of *Pseudonympha* agrees with *P. vigilans* on the *upper-side* as regards the possession of the small fulvous patch on median nervules of hind-wing, but differs in having a larger fulvous area in fore-wing; it differs further *on both surfaces* in the smaller, less circular, but more conspicuously yellowish-ringed ocellus of the fore-wing, and in wanting or presenting only in very minute form the two (sub-apical and sub-anal-angular) ocelli on the *under-side* of the hind-wing; also this last-named surface is less densely striolated and freckled generally, leaving the two transverse irregular striæ more pronounced.

As long ago as October 21st, 1863, I took two ♂♂ of this *Pseudonympha* in Bain's Kloof, the mountain road between Wellington and Worcester, in the south-western district of Cape Colony. I regarded these at the time as a variation of *P. cassius*, but have always kept them in my collection of South African butterflies not among but just apart from my series of *cassius*. Dr. Longstaff's most interesting re-discovery—after so long an interval as fifty years—of this form in both sexes, occurred at Caledon, in the same south-west district of the Cape Province (but perhaps between 30 and 40 miles south-west of Bain's Kloof), five males and two females having been captured by him from January 23rd to February 3rd, 1914.

Mr. N. D. Riley pointed out to Dr. Longstaff that in the British Museum (Natural History) there is a single ♀ *Pseudonympha* identical in characters with the specimens above diagnosed as *P. detecta*, n. sp. This example formed part of the series of *P. cassius* in the Hewitson Collection, received by the Museum about the year 1878, but bears no record of date of capture, or label of locality beyond that of "South Africa."

EXPLANATION OF PLATE XII.

SOUTH AFRICAN SATYRINÆ OF THE GENUS *PSEUDONYMPHA*.

Fig. 1.—*Pseudonympha cassius*, Godart, ♂; Caledon, Jan. 23rd, 1914.

Fig. 2.—*P. cassius*, ♀; Knysna, Feb. 20th, 1914.

Fig. 3.—*P. detecta*, Trimen, ♂; Caledon, Jan. 29th, 1914.

Fig. 4.—*P. detecta*, ♀; Caledon, Feb. 2nd, 1914.

Fig. 5.—*P. detecta*, under-side; Caledon, Feb. 3rd, 1914.

Fig. 6.—*P. cassius*, under-side; George, Feb. 15th, 1914.

Fig. 7.—*P. vigilans*, Trimen, ♂; Table Mt., March 16th, 1914.

Fig. 8.—*P. vigilans*, Trimen, ♀; Table Mt., March 16th, 1914.

Glaslyn, Waterden Road, Guildford :

October 10th, 1914.

LYGUS RUBICUNDUS, FALL.:AN ADDITION TO THE LIST OF BRITISH *HEMIPTERA*.

BY E. A. BUTLER, B.A., B.Sc., F.E.S.

I have recently received from Mr. H. Fortescue Fryer, for determination, a specimen of the above Capsid, one of four which he took in October last by sweeping in a ditch of mixed herbage at Holwoods, Hunts, on the borders of Cambridgeshire. He has since taken four others at the bottom of a bare hedge and one amongst dead leaves, all in the same neighbourhood, where the insect seems to be extremely local. The latter specimens were evidently preparing for hibernation.

L. rubicundus may easily be distinguished from the other British species of the genus by its robust and rather broad form, and the extreme shortness of the antennæ. The following description will be sufficient for its recognition.

L. RUBICUNDUS, Fall.

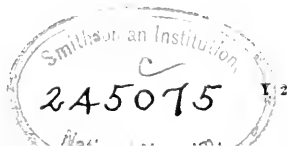
Oblong-oval, with pronotum strongly convex; rather shining reddish ochreous, often more or less tinged with fuscous. Pronotum, scutellum, and hemelytra closely and finely punctured, and thickly covered with fine pubescence. Scutellum transversely finely striate. Extreme apex of cuneus dark. Membrane smoky with darker markings, cell-nerves reddish yellow. Antennæ with basal joint rather stout, second joint much shorter than is usual in *Lygus*, only slightly longer than width of head, including eyes, third and fourth joints subequal in length, the two together about as long as second. Legs and antennæ reddish yellow, posterior femora with two indistinct reddish rings; anterior tibiæ without outstanding spines, the others with pale spines; terminal tarsal joint dark at apex, claws reddish. Rostrum dark at apex, just passing intermediate coxæ. Length 5 mm.

The insect has several varieties, depending on the varying degree of development in the fuscous markings, some being almost entirely brown. As food-plants, or possibly host-plants, Reuter gives *Salix*, *Alnus*, *Quercus*, *Prunus padus*, *Corylus*, especially the first-mentioned. He also states that this is one of the species that leave their food-plants when the leaves fall, in order to hibernate in coniferous trees or elsewhere. According to Flor, it is found also in meadows and on heaths. It is distributed through a large part of the Palearctic Region, and occurs as far north as 63° 40' N. lat. According to Horvath it occurs also in N. America.

I am indebted to the kindness of Mr. Fryer for the addition of the above specimen to my collection.

56, Cecile Park, Crouch End, N.:

November 9th, 1914.



SOME FURTHER REMARKS ON *ÆPOPHILUS BONNAIREI*, SIGN.

BY JAMES H. KEYS, F.E.S.

In the issue of this Magazine for September, 1890 (Vol. XXVI, p. 247), I recorded that a specimen of the sub-marine Hemipteron *Æpophilus bonnairei*, Sign., the pubescence on whose integument had been thoroughly wetted by immersion in a vessel containing sea-water was thereby rendered almost helpless. This result appeared remarkable to me from the fact that, in my experience, the insect's headquarters were uncovered by water at spring tides only—indeed, they impinge on the Laminarian zone—and that therefore for several days in succession the creature lives submerged, and has, I believe, no access to the outer atmosphere. All the air available for respiration would seem to be that which remains imprisoned in the holes in the stones under which it lives, and in the ground beneath them, with the addition of the supply with which it probably surrounds itself by means of its dense pubescence. The mature insect has spiracles on seven of its abdominal segments.

Thinking over these facts later on, I began to wonder if *Æpophilus* had really any need of the sea at all. Would it not thrive equally well if one could artificially reproduce the necessary sub-aquatic conditions? If so, its life-history could perhaps be worked out. With this view many trials were made and as many failures resulted, the insects living at most for a few days only.

The experiments proved progressively educational, however, and eventually a qualified success was achieved by keeping the specimens in a box lined with glass. Its size was 10" × 6" × 4". Four wooden sides were fixed together, glass fitted inside, and a glass top and bottom added. The box was then pivoted at the top of (and between) two uprights 15 inches high, nailed to a wooden base. Being suspended in this way one could examine the underside with ease, as well as tilt the box as desired. Then a suitable stone, well covered with muddy slime, etc., from the habitat, was selected and carefully brought home and deposited in the box. The *Æpophili* were then added. A bottle of sea-water was also procured with which to keep the stone as nearly as possible in its original wet state. This was effected by gently sprinkling as often as necessary. In a few days, or as soon as it appeared to be desirable, a fresh stone was obtained. The sea-water was a source of trouble in my first efforts. It was collected too near the town, and being much contaminated, rapidly putrefied and

killed the insects. This difficulty was overcome by obtaining the water from a point on the coast several miles seawards.

After many failures during 1895-6, I succeeded in 1897 in rearing two examples to the imago stage. They were larvæ in February, and matured on June 12th following. Except for a distinct deficiency in size they were perfect specimens, and I still possess them in my collection, as well as several of the cast skins of other individuals. What the creatures fed upon I am unable to say, but it must have been something provided by the slimy stones. It is hardly conceivable that the insects lived for four months and endured the physical strain of one or two moults without sustenance.

In connection with the question of food I may say that I do not know whether the setæ of the proboscis vary in form in the species of Hemiptera allied to *Äpophilus*, but in a comparison recently made by me of the setæ of the latter with those of *Salda cocksi*, Curt., I could detect no important differences.

After 1897, I had to desist from further research on account of a change in my home arrangements. Circumstances have never since been favourable to a renewal of the work, and as it now seems that an opportunity is not again likely to occur, I thought it desirable to make known such results as I had obtained.

It may be well to add further that instinctive solicitude for the young is much in evidence with the species. It was common to see in my breeding cage, on the underside of the stone, a circle of young with an adult in the centre, the heads of the immatures being all oriented towards this centre. On my lifting out the stone the adult would almost instantly alarm the young with a rapid tap with each antenna alternately, and the whole troop would scamper round to the other side of the stone with great speed.

Äpophilus, mature and immature, has been taken by me from February to October, inclusive. I have no record of searching for it in the three remaining months of the year, but it is, I think, quite safe to conclude that it breeds and can be found in all its stages throughout the year.

7, Whimble Street, Plymouth:

October 30th, 1914.

WHAT WAS *SPHEX XANTHOCEPHALA*, FORSTER

(A BRITISH INSECT, BUT IGNORED IN BRITISH LISTS)?

BY THE REV. F. D. MORICE, M.A., F.E.S.

So long ago as in 1771 the once-celebrated author and traveller J. R. Forster—deserving to be remembered *inter alia* as the naturalist who accompanied Cook on his second voyage—published in London the description of a black and yellow fossorial wasp, which he named as above, and whose habitat he gives as “Anglia.” The description—with certain not unimportant omissions—was reproduced by Gmelin in his edition (1790) of “*Systema Naturæ*,” but it seems to have entirely escaped the notice of British authors, and I can find no allusion to such an insect in the works of Shuckard or F. Smith or E. Saunders. It is mentioned, however, with a note of interrogation prefixed, in v. Dalla Torre’s *Catalogus* as possibly synonymous with *Philanthus triangulum*, F.; and if this identification could be established, the latter well known name would have to be abandoned, since the earliest description of *triangulum* was in 1775—four years later than the publication of *xanthocephala*. But I think it is demonstrable that *xanthocephala* was not *triangulum*, but a much more common British insect, whose name is fortunately unalterable, having been fixed by Linné in 1758 in the 10th edition of “*Systema Naturæ*.”

Forster’s description, though naturally based almost exclusively on colour-characters, is very careful and full of detail. He tells us that the size of the insect was that of *Crabro cribrarius*, L.; that the apices of the wings were ‘fuscescentes’ (which can hardly be said of *triangulum*), and that the basal joint of the antennæ was yellow (in *triangulum*, except in some quite southern forms, it is generally entirely black, or at most bears a small yellow spot which easily escapes notice). But the description of the abdomen makes it, I think, quite clear that the insect in question is not *triangulum*. It runs thus: “Abdomen nigrum; margines segmentorum 2, 3, 4, 5, 6 fasciis flavis cincti, subtus puncta flava utrinque duo.” This, as I read it, can only describe an insect with the basal segment of its abdomen entirely black, and with the segments following belted each with yellow at the apical margin only of its dorsal plate, while, on the ventral side, the abdomen is black entirely except that two of its plates have roundish spots (puncta!) on their sides. Now having examined countless foreign specimens and several British ones of *triangulum*, both ♂♂ and ♀♀, I have never seen among them anything at all resembling the above coloration. Even in the darkest forms, the basal

dorsal-plate has two large and conspicuous (subtriangular) lateral patches of yellow colour, and the segments following, instead of a mere "marginal belting" of that colour, have practically their whole sides yellow right up to the base of each ring. The venter also is much more largely yellow than black, some segments are yellow right across, and all are widely so at their sides at least (never merely spotted with yellow!)

After considering the claims of all the black and yellow British Fossors yet described, I have come to the conclusion that there is one, and only one, in which I can recognise every single character ascribed by Forster to his *xanthocephala*—viz., the ♂ of the common and well-known *Cerceris arenaria*, F. Two possible objections to this identification ought perhaps to be met before accepting it, but both in my opinion can be met quite completely.

1. It may be asked—since Forster was undoubtedly familiar with Linné's descriptions of *arenaria* in "*Systema Naturæ*" and "*Fauna Suecica*," why did he fail to recognise the species when he met with it?

But, if these descriptions be consulted, it will be found that the characters given in them are those of the ♀. Although the two sexes of *arenaria* are very similar, they differ in points, which in Forster's day might quite well have been thought to indicate specific difference, e.g., *arenaria* ♀ has generally yellow markings on the basal segment, and on its face—instead of the (♂) "macula magna flava posticetrida" described by Forster—it has as Linné states in *Faun. Suec.* "three yellow spots."

2. It has been suggested to me that Forster's expression *abdomine subsessili* does not well apply to a *Cerceris*, since in that genus the basal segment is more or less coarctate and might be called a petiole.

But *abdomine subsessili* is a Linnean phrase, and Forster no doubt uses it in the Linnean sense. Linné in *Systema Naturæ* divides all the species of *Sphex* into two groups only, viz. (1) "*abdomine petiolato, petiolo elongato*," and (2) "*abdomine subsessili*," or, as we might say, (1) Long-waisted forms, and (2) Short-waisted forms. In the first division he places species now reckoned under *Sphex*, *Sceliphron*, *Trypoxylon*, &c., where the abdomen is evidently "stalked"; in the second all other Fossors, *Cerceris* included, e.g., *arenaria*, the very species now under consideration.

Obviously it is *prima facie* more likely that Forster should have

met "in England" with the common and widely distributed *arenaria* than with the rare and local *triangulum*, though possibly the latter may not have been quite so rare with us in the 18th century as it has been ever since. But I do not desire to press this point, believing the case to be complete without it.

I conclude, then, that *xanthocephala*, Forster (1771) should be treated as a synonym of *arenaria*, L. (1758), and should not be considered as a possible earlier name for *triangulum*, F.

Brunswick, Woking :

October 10th, 1914.

Xantholinus cribripennis, Faurel, in Oxfordshire and Berkshire.—Whilst turning out a mole's nest near Oxford, on October 17th, 1914, a pale *Xantholinus* was taken, which I was satisfied was a ♀ of *X. cribripennis*, but as I do not know of any pronounced character for this sex, I did not care to record it from a southern locality upon a single female example. Upon mentioning this to my colleague Mr. J. Collins, he examined his series of *X. linearis*, Ol., and found one taken at Cothill, Berks, on April 3rd, 1910, which he thought might be another example of *X. cribripennis*, and not an immature form of *X. linearis*, as he had at first considered it. On critically examining this example, I found it to be an undoubted ♂ of *X. cribripennis*, the notched

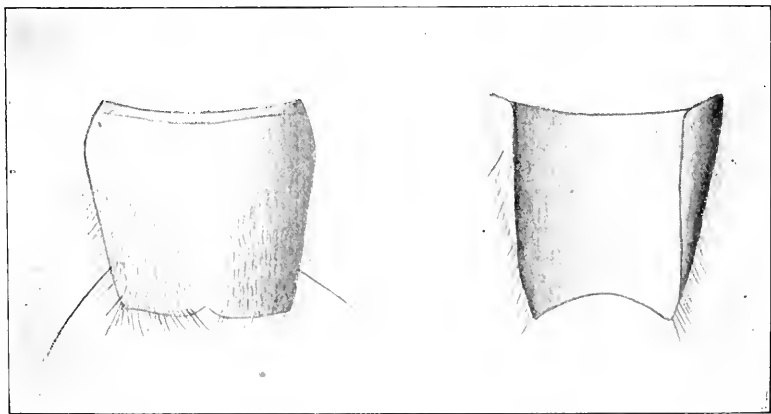


FIG. a.

FIG. b.

upper-plate (fig. a.) and excavate under-plate (fig. b.) of the seventh abdominal segment being identical with those of examples from Dalwhinnie, ex coll. N. H. Joy, in my possession. I also examined examples in Commander Walker's collection, which he very kindly placed at my disposal, and found that the Co. Donegal example, ex coll. J. N. Halbert, with some similar to my own

from Dalwhinnie, ex coll. N. H. Joy, were all identical. An example from Thurso, Caithness, taken by the Rev. A. Thornley, which had been given to Commander Walker as *X. distans*, was also typical *X. eribripennis*.

As I have not seen any mention of the very distinct male character in *X. eribripennis*, I have made drawings of the two plates.—H. BRITTEN, 2, Hope Villas, High Street, Headington, Oxon: November 16th, 1914.

Note on the heath-frequenting species of the genus Haltica.—Dr. Sharp, in his account of the three species of this genus living upon heaths (*antea*, pp. 259-264), states that the male of one of them, *H. ericeti*, All., is unknown to him. This insect is quoted by him from Surrey, from specimens captured by myself at Frensham, Esher, Woking, &c. He was not aware, however, at the time, that I had five males from Frensham, found on the same day, as well as one from Chobham, and another from the Lizard, all from heath. These seven males are very like the only male of the northern *H. britteni* in my collection, but differ from it in having the basal joint of the anterior and intermediate tarsi a little less dilated. The aedeagus of these two insects appears to me to be precisely similar in form.—G. C. CHAMPION, Horsell: November 9th, 1914.

Abundance of Pyrameis cardui near Sheffield.—On Sept. 7th, while on the Penistone-Sheffield Moors, I was surprised and delighted to see *Pyrameis cardui* in some numbers. In the immediate neighbourhood of Broomhead Hall it was by far the commonest butterfly seen. The day was hot and sunny. Last year, rather earlier (nearly a month to be exact), I saw a few of this species on the Humber side of the Spurn peninsula. When settled on flowers of the sea-holly, they offered a beautiful contrast in colour.—E. G. BAYFORD, Barnsley: November 9th, 1914.

Pyrameis cardui near London.—To-day I saw a very perfect specimen of *Pyrameis cardui* in my garden at Putney Heath. It is interesting, I think, to meet with this erratic butterfly so close to London.—G. B. LONGSTAFF, Highlands, Putney Heath, S.W.: September 15th, 1914.

Third brood of Pieris brassicæ.—Referring to Commander Walker's note in this Magazine for November, I should like to mention that on October 17th, 19th, and 24th I saw *P. brassicæ* flying in my garden here, and on October 20th a single specimen of *P. rapæ*.—G. T. LYLE, Brockenhurst: November 7th, 1914.

Buddleia and butterflies: an American note.—The following letter, recently received by me from Mr. Fred. C. Bowditch of Brookline, Mass., U.S.A., is an interesting confirmation of my note on the attraction of *Buddleia* for *Lepidoptera* on p. 248 of the current volume of this Magazine: "Our summer residence (where we have a flower garden) is at Marion, on Buzzard's Bay. Last spring we set out two *Buddleia variabilis*, and they attained a height of about eight feet, and were covered with blooms from about August 1st until we left on

September 17th. I remarked to my wife and various visitors that one of the charms of *Buddleia* was that it was such a favourite with butterflies, far ahead of all our other garden flowers or shrubs; sometimes as many as a dozen on it at once, also very many *Diptera*, and in the evening many *Noctuæ*. I did not notice any beetles, but the forms mentioned were noticeable by their constant attendance. It was so great a favourite with us that we expect to have a bed of ten or a dozen plants next year, and I expect all the butterflies of the neighbourhood. I thought you might be interested in this corroboration of your observations."—JAMES J. WALKER, Oxford: November 12th, 1914.

Some more British records of Danaida plexippus.—Mr. N. V. Sidgwick, of Lincoln College, Oxford, has just kindly shown me a ♀ example of *Danaida plexippus* in fairly good condition, which he captured on the undercliff at Lyme Regis. on August 14th, 1886, "immediately after a westerly gale." I am also indebted to Mr. A. H. Swinton for calling my attention to a specimen of this butterfly, stated by the late Mr. G. C. Bignell to have been taken in 1885, in the Citadel Road, Plymouth. I well remember my old friend telling me that *D. plexippus* had been taken in the Plymouth district, but up to the present I had thought that he referred to the specimen taken by Mr. F. F. Freeman in the same year, a few miles to the westward, at Downton, Cornwall (*ante*, p. 227). Mr. South has also kindly referred me to a record by Mr. W. J. Lucas, in the "Entomologist," vol. XXX, p. 18, under the Cramerian name of *Anosia menippe*, of a specimen seen, but missed, at Newlands Corner, near Guildford, Surrey, on July 12th, 1896. I had overlooked this record when compiling my table of the British occurrences of the butterfly.—J. J. WALKER.

Aculeate Hymenoptera in the Woking district.—This year we almost completely neglected *Lepidoptera* to devote our time and energy to getting together a sample collection of *Fossoræ*, *Diploptera*, and *Anthophila* from this corner of Surrey. The productive early spring season was neglected, so that several quite common species were missed, and our collecting grounds were almost confined to the Horsell and Chobham sand heathland, but we think it may be of interest to note briefly what sort of selection may fall to the nets of two novices in a short season; in all some 155 species have been named, all the more critical of these with the help or confirmation of the Rev. F. D. Morice, to whom we are indebted for much kind assistance.

The species marked with an asterisk are additions to the "Victoria History" Surrey list.

MUTILLIDÆ: *Mutilla europæa*; *Myrmosa melanocephala*, ♀ ♀ not rare, up to a dozen being procurable on a suitable day, and a single ♂ taken on flowers; *Methoca ichneumonoides*, not rare, but less frequent than the last. Observations were made on the habits of this species (*cf.* Ent. Mo. Mag., Nov. 1914, pp. 266-270).

TIPHIIDÆ: *Tiphia femorata*,* one ♀ on an umbel of *Feniculum vulgare*, at Horsell; this species does not appear in the county list.

POMPILIDÆ: 15 species, including *Pompilus bicolor*, not rare; *P. rufipes*, a couple; *P. cinctellus*; *P. pectinipes*, one specimen; *Homonotus sanguinolentus*

♂ and ♀ [*cf.* Ent. Mo. Mag., Nov. 1914, p. 270]; *Salix pusillus*, two specimens, with abundance of *S. parvulus* and *S. exaltatus*; and *Cecropales maculata*, singly.

SPHEGIDÆ: 34 species, including all three species of *Trypoxylon*, and all four of *Anmophila*, though of *A. hirsuta* and *A. lutaria* only one example each were taken; *Mimesa shuckardi*, singly with *M. bicolor*; *Gorytes quadrifasciatus*, common; a single specimen of the rare *G. bicinctus*; *Cerceris arenaria*, *C. labiata*, and *C. ornata*, all common; one example of *Oxybelus mandibularis*, with plenty of the common *O. uniglumis*; *Crabro clatipes*, common in one locality; *C. gonager* and *C. palmarius*; *C. varius*, not rare; *C. panzeri*; *Astata boops*, accompanied by its parasite, *Hedychridium roseum* (*Chrysididæ*) seen but not caught.

DIPLOPTERA: 11 species, none of note.

COLLETIDÆ: 3 species. The rare *Prosopis genalis** was taken in three different localities; *P. brevicornis*.

ANDRENIDÆ: 46 species, including *Halictus zonulus*, *H. decipiens* and *H. minutus*; *Andrena argentata*, common; *A. cetii*, a few examples; *A. analis*, *A. denticulata*, and *A. varians*; *Macropis labiata* on *Lysimachia vulgaris*, not rare; *Dasygaster hirtipes*, a ♀ on the Hog's Back, Sept. 5th, and a ♂ at Horsell, July 25th; *Cilissa leporina*; both species of *Panurgus*, not rarely; *Nomada sexfasciata*; *N. lineola* and *N. jacobææ*; *N. alboguttata*, abundant with its host, *Andrena argentata*.

APIDÆ: 37 species, including *Epeolus rufipes*, common; *E. productus*, which is recorded from Woking in Saunders' work, but does not appear in the later Surrey list; *Celioxys elongata*, *C. rufescens*, *C. quadridentata*, and *C. acuminata*, only the first being at all frequent; *Megachile maritima*, abundant; *M. lignisea*; *M. versicolor*, ♀♀ only; *Anthidium manicatum*, locally common; *Anthophora furcata* and *A. retusa*; all the British species of *Psithyrus* except *P. distinctus*; *Bombus jonellus*, common on the heaths.—H. G. and R. J. CHAMPION, Horsell: October 14th, 1914.

Reviews.

"THE GENITALIA OF THE BRITISH GEOMETRIDÆ." The Genitalia of The Group Geometridæ of the Lepidoptera of the British Islands. An account of the morphology of the male clasping organs, and the corresponding organs of the female. By F. N. PIERCE, F.E.S. Illustrated by the Author. Liverpool: F. N. Pierce. 1914. xxix + 84 pp., 48 plates.

This companion volume to that dealing with the *Noctuidæ* by the same author, published in 1909, embodies the result of several years' patient research, in which he has had—as acknowledged in the preface—the constant co-operation of Rev. C. R. N. Burrows. The modest motto adopted ("even the smallest contribution to our knowledge adds to the common store") does less than justice to the work, which is a mine of exact information on the special branch of morphology of which it treats.

The introduction (pp. xvii—xxix) gives a systematic account and nomen-

clature of the parts and introduces various new terms, as well as many which have been proposed by the author and other workers earlier. The law of priority is faithfully observed, so that a few names used in the "Noctuidæ" volume have had to sink. The nomenclature is becoming rather formidable, but must needs be mastered by all who aim at precision. Mr. Pierce is probably justified in protesting that "such obscure phrases as *medio dorsal* process" are reprehensible.

To the earlier volume, it was objected in some quarters that Mr. Pierce had not the courage of his convictions on the question of the genera, or systematic grouping of the species, so that while frequent attention was called to the fact that such-and-such species were "strongly generic," or that others which had been associated with them in the same genus were "very distinct," no new taxonomic arrangement was given, and the author's scheme or views of classification remained difficult to grasp. In the present volume a complete re-classification of the *Geometridæ*, based exclusively on the genitalia, is presented. The ideal method of dealing with the taxonomic question without undue complications as regards nomenclature has evidently still to be devised; if Mr. Pierce's present method is to be followed in every monograph or memoir dealing with a particular organ or structure, we shall have probably as many systems as there are works of this class, and none will have any claim to acceptance outside itself. It is a common saying, and almost a platitude, that the perfect system is that which takes account of the *whole* organism, but as that can only be reached through a series of specialistic studies such as that upon which Mr. Pierce is engaged, we think he has upon the whole done wisely to present the species in that sequence which his particular studies dictated, and our only hesitation is whether it was equally wise to call his conceptions "genera," or furnish them with generic names. As a matter of fact, however, many of the genera are not diagnosed, so that their characterization is left to conjecture or to laborious deductions from the descriptions of the species. Thus it seems doubtful whether it would not have sufficed to treat the various "groups" (sub-families) as the genera, for these are defined, and then usually follow at once the species, merely with generic names prefixed.

The author divides the family into two main divisions, Gnathoi and Agnathoi, the former with gnathos developed, the latter with "Gnathos reduced to a mere thickening of chitine, or absent," as seems to have been tentatively proposed by Chapman (see Prout, Gen. Ins. Brephinae, p. 6). On the whole it yields satisfactory results—i.e., such as are supported by, or at least compatible with, those deducible from other known characters; but it is not in itself quite absolute, though "the species falling within the Gnathoi, but having the gnathos rudimentary or atrophied, are so few that they may be left out of consideration" (p. xxi). The further characterized groups (sub-families) are, in the Gnathoi, *Geometrinæ*, *Ourapteryginæ*, *Ennominæ*, *Macarinxæ*, *Bistoninæ*, *Boarmiinæ*, *Eranninæ* (*Hibernia*, auctt. etc.), *Gnophinæ*, *Abraxinæ*, *Ptychodinæ*, 10 in all; in the Agnathoi, *Acidaliinæ*, *Cosymbiinæ* (*Zonosoma*, Led., etc.), *Astheninæ*, *Oporiniinæ* (*Operophtera*, etc.), *Eupitheciinæ*, *Melanthiinæ*, *Philereminæ* (*retulata* and *rhamnata* only), *Lobophorinæ*, *Entephriinæ*, *Cidariinæ*, *Therinæ*,

Epirrhoinæ, *Xanthorhoinæ*, *Ortholithinæ*, *Chesiadinæ*, 15 in all. Thus the Gnathoi consist of the *Larentiinæ* combined with a part of the *Acidaliinæ* of the current systems; it is curious that the rest of the last-named (as *Ptychopodinæ*) fall in the Gnathoi, but we have long been told that the old "*Acidalia*" was very heterogeneous, though we should have doubted the necessity for a sub-family separation.

Space forbids a detailed account of the lower groupings. Mr. Pierce finds *Aplasta ononaria* related to *Pseudoterpna pruinata*, which is interesting, inasmuch as Meyrick, by the neurulation, at one time referred it to the "Emerald" sub-family. *Lithina petrarum* and *Pachygenemia hippocastanaria* are rather unexpectedly found among the "Thorns." *Aleucis pictaria* is considered to have affinity with *Theria rupicaprarum*. *Parascotia fuliginaria* is placed, though with hesitancy, in the *Cosymbiinæ*; was not Mr. Pierce aware that the larva and the neurulation had long ago led to its entire detachment from the *Geometridæ*? He admits that the uncus is perhaps *Noctuid*. The presence of *labides* in the genus *Cænocalpe*, similar to those of *Eupithecia*, lends some colour to Meyrick's association of some members of each in a single genus (*Eucymatoge*), though not fully justifying it. The genus *Entephria*, on which Dr. Chapman published a valuable note (Ann. Soc. Ent. Fr., lxxvii, pp. 497-500), is made to include also *multistrigaria* and *olivata*, but *pectinataria*—so near to *olivata* on all other characters—is separated as *Amoebe*; in considering whether this was really necessary from Mr. Pierce's standpoint, we again feel the need of generic diagnoses, but probably the very different uncus was responsible.

In the difficult genus *Eupithecia*, we have to thank Mr. Pierce for some good, careful work, but unfortunately some of the most closely allied pairs or groups of forms have failed to yield tangible differences, so that we are still left in uncertainty as to whether they should be regarded as species. This is the case with *denotata-jasionæata*, *sobrinata-anglicata* (in error, *angelicata*, a regrettable confusion, as there is a form of *albipunctata* of this name), *fraxinata-innotata-tamarisciata*, *satyrata-eurizoni-callunaria*, *goossensata-knautiata-absinthiata*. By the way, p. 45 (*sobrinata*, etc.), should read, "these two forms" as *stevensata* is a synonym of *anglicata*; it would have been helpful to the eye, here and elsewhere, if synonyms had been printed in a different type from the valid names. A few errors in Petersen's work on this genus (Iris, xxii, pp. 203-314) are corrected.

Chlorissa viridata is shown to be differentiable from its close ally, *porrinata*. The latter and a few other non-British, or doubtfully British forms are included in the work for purposes of comparison, or on the assumption that they may turn out to be British.

There are, as is perhaps almost inevitable, a few misprints or lapses in the transcription of names; thus, *Hipparchis* stands for *Hipparchus*, *marginipunctata* for *marginepunctata*, *Lythia* for *Lythria*, etc., and a rather embarrassing use of capitals for the names of species (due to their being printed uninomially except in the case of the first species of a genus) is a not very welcome survival from the "*Noctuidæ*" volume. But these are slight blemishes, and we

are able to commend very cordially the clear and accurate presentation of the material, and to wish the work the success which it so well deserves.

We are glad to learn that a similar account of the genitalia of the *Tortricidæ* is to follow at no distant date.—L.B.P.

“THE LABEL LIST OF BRITISH LEPIDOPTERA”: compiled after several standard authorities. London: Watkins and Doncaster, 36, Strand, W.C. 1914.

The title of this list, of which the printing and paper leave nothing to be desired, is somewhat misleading, as only the names of the so-called “Macro-Lepidoptera” with the addition of the “Pyrales” and “Crambites” are included in it. While a really complete and “up-to-date” list for labelling our cabinets is still a desideratum, the one now noticed will, we think, hardly satisfy the more advanced collectors and students of our *Lepidoptera*. The generic and specific names are mostly in accordance with modern ideas, but one synonym at most is given, and the entire absence of author’s names—which would have added greatly to the value of the list, and would not have appreciably increased the size of the labels—is much to be regretted. That the demand for “English” names still exists in full force is evident by the prominence given to these quaint survivals; though we confess to a certain amount of respect for the majority of these titles, which amid the welter of recent changes in nomenclature, have remained unaltered from the days of Haworth and the old “Aurelians.” The “popular” names of recent additions to our list are scarcely as happy as some at least of the old ones, and we could have wished that our distinguished visitor, “*Anosia archippus*,” included without comment in the list of *Rhopalocera*, had retained one of its long-established and appropriate American designations as the “Milkweed Butterfly,” or the “Monarch.”

Obituary.

It is with great regret that we record the death of *William Warren*, who passed away on October 18th at Tring, at the ripe age of 75.

William Warren was an entomologist well known to the majority of workers in this country. He was born at Cambridge in 1839, and was first educated at Oakham School, and subsequently graduated at Cambridge, taking first-class classical honours. It was probably for this reason that he selected the profession of schoolmaster as that which he wished to follow, and on leaving the University he entered Doncaster Grammar School. He was always, from his earliest youth, greatly attached to the study of Entomology, the hobby being favoured by his acquaintance with Messrs. T. and J. Brown, of Cambridge. No man knew the entomology of Cambridge and its surroundings better than William Warren, and it was he who first directed the

attention of the late Albert Houghton towards the study of the insects in Wicken Fen.

The "discovery" of Chippenham Fen as an entomological Mecca was the work of Warren, who, knowing that this interesting spot was carefully worked for plants by the late Mr. William Cross, of Ely, started searching there for *Lepidoptera*, and turned up in the same year *Plusia chryson* and *Bankia argentula*. He likewise discovered there *Asthenia pygmaea*, and also, in the neighbouring locality, the still rarer *Rhyacionia posticana*.

As a collector Warren was absolutely indefatigable, and his knowledge of the British Isles was remarkable. We doubt if many entomologists have tramped over such a large area of this country, not excluding the late F. Bond. There is no doubt that his first and last love were the so-called Micro-lepidoptera of Britain, and his knowledge of them was truly remarkable. He was the first to discover *Laspeyresia pallifrontana* in this country, and was well to the fore in the finding of the larva of *Pamplusia pauperana*, while he shares the re-discovery of *Platyptilia rhododactyla* in recent years.

As a field worker and companion in pursuit of his favourite hobby, Warren had no equal. No day was too long for him, no climb too strenuous. Up to the end of his life he was still vigorous and hearty, and could tramp many miles without showing any apparent fatigue.

But to go back to his life's work. Warren, after leaving Doncaster School, relinquished the calling of schoolmaster altogether and went in for Entomology pure and simple. He worked at the *Geometridæ* in the British Museum and also did much work for the Tring Museum, in the service of which institution he passed away. We all deplore his loss, and if there is one quality which Warren possessed in a pre-eminent degree, it was the quality of optimism. No matter under what circumstances, he always felt confident that things must and would come right in the end.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: Thursday, Oct. 22nd, 1914.—Mr. B. H. SMITH, B.A., F.E.S., President, in the Chair.

The evening was set apart for an exhibit and discussion of the genus *Anthrocera*, introduced by Mr. B. S. Curwen.

Mr. Curwen exhibited a collection of Palaearctic *Anthroceridæ*, consisting of some twenty-six species and forms. Dr. E. A. Cockayne, the series of *A. hippocrepidis* from the late Mr. J. W. Tutt's collection, with various series of *A. filipendulæ*, *A. trifolii*, *A. palustris*, and *A. lonicerae*. Mr. F. H. Stallman, early and late races of *A. trifolii*, *A. filipendulæ*, etc. Mr. Buckstone, similar series with suggested hybrid series, *trifolii* and *filipendulæ*. Dr. Chapman, a drawer of European *Anthroceridæ* captured during the last few years, including *A.*

anthyllidis, *A. contaminæi*, *A. sarpedon*, etc. Mr. Hy. J. Turner, series from many localities, mainly of the five- and six-spotted species of the *Transalpiniformes* group. Mr. L. W. Newman, series of bred *Anthroceridæ* species. Papers and notes were read and communicated by Messrs. Curwen, Cockayne, P. A. Buxton, Turner, R. Adkin, etc. Mr. Newman exhibited long varied series of *Dianthæcia barrettii*, bred from Co. Cork and from S. Devon, bred series of *Boarmia repandata* from the Wye Valley and from N. Cornwall, and a series of the rare hybrid *Amorpha populi* \times *Smerinthus ocellatus*. Mr. Tonge, the same hybrid, and a *Rumicia phlæas* from Deal, with the red sub-marginal band on the hind-wing quite wanting.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, October 21st, 1914.*—The Hon. N. C. ROTHSCHILD, M.A., F.L.S., F.Z.S., Vice-President, in the Chair.

Messrs. L. D. Cleave, Dept. of Science and Agriculture, Georgetown, British Guiana, and J. R. Menon, B.A., Trichur, Cochin State, South India, were elected Fellows of the Society.

The death was announced of Mr. William Warren, M.A., F.E.S.

Dr. T. A. Chapman exhibited three abnormal specimens of *Anthrocerids*:—(1) *Anthrocerus anthyllidis* taken this summer at Gavarnie, with the left mesothoracic tarsus triplicated. (2) *A. exulans*, taken at Oberalp some twenty years ago, having an abortive wing beneath the left anterior wing, and even a trace of a third anterior wing beneath the second. (3) *A. achilleæ*, from Zermatt, having symmetrical depressions of the costa, the nervures being all present as in a normal specimen. Mr. L. W. Newman, a long and varied series of *Dianthæcia barrettii*, bred from wild larvæ collected in Co. Cork, and dug pupæ from S. Devon. Mr. A. E. Tonge, a specimen of the hybrid *Amorpha populi*, δ \times *Smerinthus ocellatus*, φ , bred *ab ovo*; also a specimen of *Rumicia phlæas*, taken on Deal Sandhills in September, 1914, without the red marginal band on the hind-wings. Mr. G. Meade-Waldo, a styloped specimen of the sand-wasp, *Ammophila tydei*, Guill., from South Africa. There were no fewer than seven *Stylops* parasitic on it. Mr. E. B. Ashby, some South European butterflies, chiefly from the south of France. Mr. Rippon, a variety of *Psilura monacha*, which consisted in the body being banded with black and yellow instead of black and crimson; also five specimens of *Triphæna fimbria*, bred from Pamber Forest larvæ, showing some modification of the usual forms. Mr. A. H. Jones, a number of moths from Sarepta, and read notes on them. Dr. E. A. Cockayne (*a*), thirty-eight gynandromorphous *Agriades coridon* from Royston; (*b*) two φ φ of *A. coridon* from Royston showing streaks of blue, neither with any signs of androconia; (*c*) one gynandromorphous *Polyommatus icarus* (Co. Clare, 1914), predominantly female ab. *cærulea*, but with androconia regularly arranged and numerous.

The following paper was read: "On Hawaiian *Ophioninæ* (Hymenoptera, Fam. *Ichneumonidæ*), by R. C. L. Perkins, M.A., D.Sc., F.E.S.—GEO. WHEELER, *Hon. Secretary*.

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March 3rd, on "The Arctic Beds of the Lea Valley and their Correlation," Mr. S. Hazzeldine Warren, F.G.S., F.Z.S. March 17th, on "The Minor Variations of *Euchloë Cardamines*," Mr. H. B. Williams, LL.B. April 7th, "Wayside Notes," L. B. Hall, F.L.S.

Chingford Branch Meeting at the Avenue Café, Chingford, Friday, March 27th, at 8 p.m., on "Caves and Underground Waters of the Yorkshire Limestone," by T. R. Burnett, D.Sc.

Woodford Branch Meeting at the Wilfred Lawson Hotel, Monday, March 30th, at 8 p.m., "Notes on some British Mammals," by Mr. A. Capleton.

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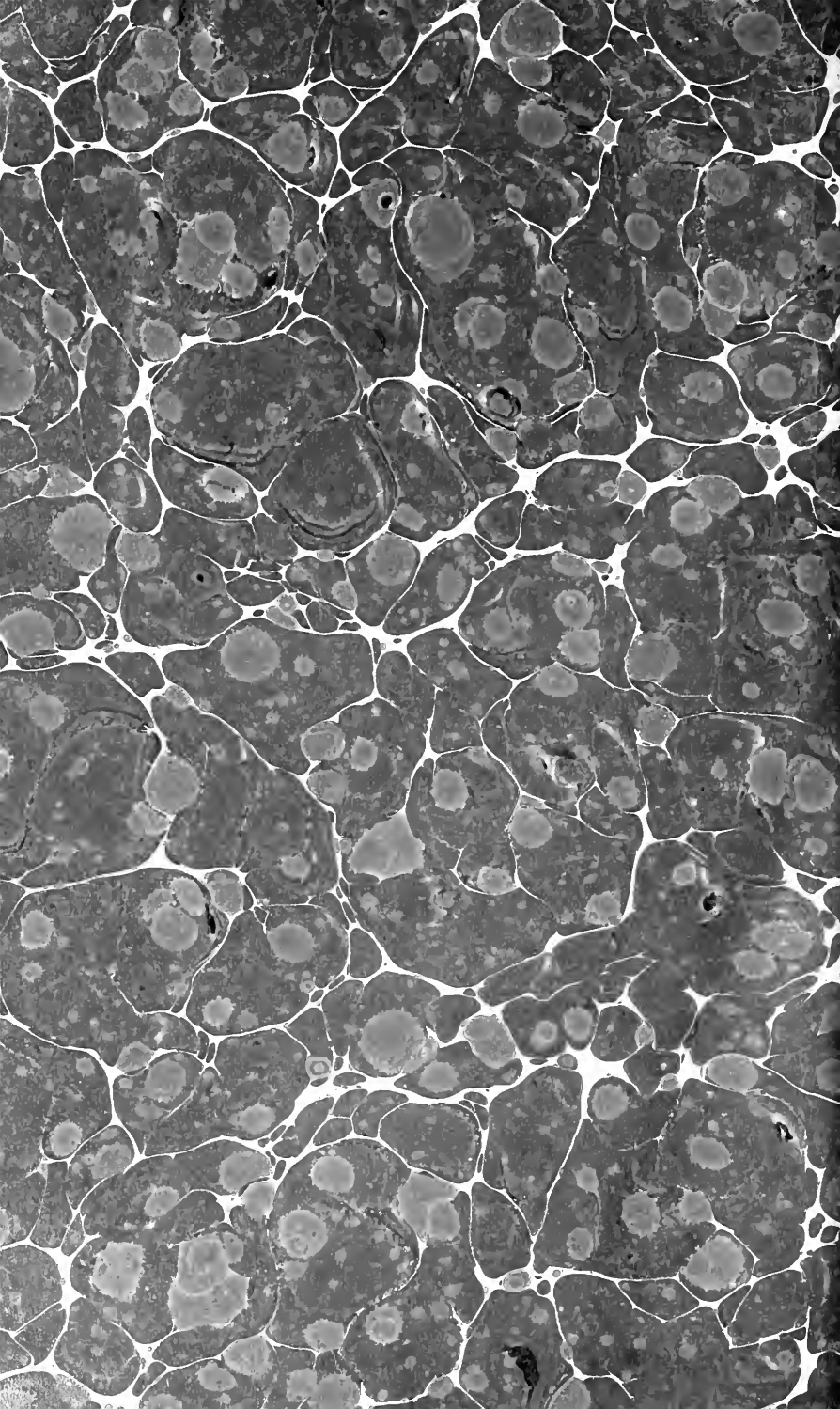
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